TUBERCULOSIS

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TUBERCULOSIS

And Allied Diseases

An account of their Origin and
Treatment from the Earliest Times
up to and Including the Present

BY

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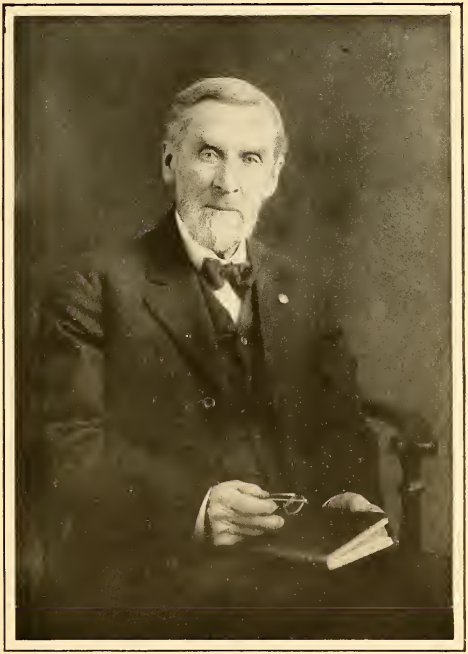

FREEMAN HALL

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DEDICATION

To the memory of Prof. Robert Koch, whose discovery of the tuberculosis germ made it possible to know and understand the cause and true nature of the disease tuberculosis: this book, with all deference and esteem, is dedicated.

PREFACE

Anticipating possible criticism of my attitude in this work on the Diagnosis and Treatment of Tuberculosis, because of having frankly and fully explained to all who read, whether layman or physician, the truth as to the lack of certainty and absoluteness of diagnosis in the incipient stage of Tuberculosis, except where the tubercle bacillus is actually found in the sputum, I think it best to give my reason for departing from the usual course of refraining from discussion of the diagnostic value of symptoms in a work of this character, intended as it is for the eye of both the physician and his patient.

In my experience gained in a long and active practice, the last ten years of which have been devoted more particularly to the study and treatment of Tuberculosis, I have had much opportunity to note the effect of fully and frankly discussing with my patients their symptoms; and where these symptoms presented doubtful significance in diagnosis, of frankly explaining their value.

It has been my observation that such frank discussion leads to a more perfect understanding between patient and physician, and where this is the case the treatment prescribed is quite certain to have the full and willing co-operation of the patient in those minor details which are often the little balance required to turn the tide and start the patient toward recovery.

PART I

HISTORY OF TUBERCULOSIS

SHALL CONSUMPTIVES BE RESTRAINED BY LAW?

CATARRH, BRONCHITIS, INFLUENZA, AND THEIR RELATIONSHIP TO CONSUMPTION

TUBERCULOSIS

THAT there was any lung trouble, Consumption or Tuberculosis in those prehistoric days, when men lived wild and rugged lives in the mild climate of the favored countries where the human race first made its habitation, is improbable. The disease, in all likelihood, did not make its appearance until after Man began to live a communal life.

Scholars are agreed that when he wrote the treatise, "On Those Who are Attacked by a Cough After Illness," Democritus, who to us is little more than a name, dim on the borderland of legend, was discussing Consumption or Tuberculosis. This work, the title of which alone survives, was the first recognition of the disease of which we have any record.

It is unfortunate that the work of this old Greek physician has been lost, for it would be very interesting to compare his opinion of the disease with what is here recorded as the best thought of the present time.

It is quite likely, however, that he had sound views as to the treatment of the disease, for what we know of him indicates that he was a man of keen discrimination and sound common sense. A few hundred years later, in the writings of Hippocrates, we find instructions for the management of a case which sound strangely modern to us. This wonderful Greek, probably a distant disciple of Democritus, whose mind seemed to grasp the fundamental principles of Medicine ages ahead of the knowledge of his time, described tuberculosis correctly as a fever and prescribed for it,—not prayers and incantations, as had been customary among the priests and people up to his time,—but fresh air, change of climate and hygienic living.

Galen, the next great name in medical annals following that of Hippocrates, endorsed the latter's advice. Knowledge of the disease in this time (A. D. 131–200) had advanced so far that he recognized it as contagious. He considered it dangerous for a well person to come in personal contact with a consumptive. We now know that, to a certain limited extent, he was

correct in this opinion. This is an interesting fact, for in later centuries the contagiousness, or rather, the infectiousness of consumption was lost sight of. Every one, including physicians of every nation, looked upon it until recently as a strictly hereditary ailment.

From the time of Aretæus, Celsus and Frascatorious, to that of Avicenna, who lived A. D. 980–1037, or about the time William the Conqueror invaded England, no progress was made in the knowledge of the disease. These men gave instructions for its treatment, practically identical with those first laid down by Hippocrates. The probability is that they were simply copyists of the great physician who preceded them.

Not a single person in the world, apparently, up to the 17th century, ever entertained the thought that the disease was curable. In that century a man appeared whose name must be ever memorable in the annals of the profession, for he, Richard Morton, first declared, in 1689, his belief in the curability of the disease. His writings give a curious picture of his time, and make us thankful that we live under more favor-

able conditions. In his day, consumption, destructive as it is at the present time, must have been a scourge, for he says he wondered how any one could escape falling a victim to it. Incidentally he praises the vital resistance of those who were able to resist the disease, and made this capability of some of his contemporaries the text for a homily on the virtues of a sober and temperate life.

The records are again silent as regards the disease until the 18th century, when Dr. Sydenham, another colossal medical intellect, the greatest, perhaps, since the day of Celsus, wrote a long treatise on its treatment, in which he insisted most emphatically on the importance of fresh air. In the 18th century, also, Auenbrugger advanced the treatment of the disease in a revolutionary way by inventing the art of percussion.

It was not until 1819, however, when Laennec published his immortal work, "De l' auscultation Medicale," that the profession really began to understand the nature of the disease. Laennec studied the anatomy and physiology of consumption, and formulated certain rules of diagnosis

which have not been improved upon even to this day. Any one afflicted with this disease owes a certain debt of gratitude to this great man, who devoted many years of his life and all the powers of his tremendous intellect to devising ways and means for their benefit.

Boyle is another name to be held in kindly remembrance, for he it was who, at about the same period, founded the modern pathology of tuberculosis. He held that inflammation never caused consumption, and also that hemorrhage was merely an incident of the disease. It was not without great difficulty that Boyle forced his views on the medical men of his time. Is it not a curious circumstance that less than one hundred years ago the most eminent medical men and, of course, all the people, believed hemorrhage was the cause of consumption? However, it was an excusable mistake, since, as we know, a very large number of consumptives are first alarmed over their condition by a bleeding from the lungs.

From Boyle's day onward, investigators became more active in studying the minute mani-

festations of the disease, but it was not until 1868 that the profession as a body was compelled to change its belief that the disease was an hereditary ailment. In that year a French army physician named Villemin first proved, beyond possibility of contradiction, that consumption is an infectious disease; in fact, a very slow and chronic fever,—and should be treated accordingly. He contended that experiment would prove the disease could, and would, reproduce itself.

It was not until 1877, however, that its inoculability was finally proved by the German scientist Cohnheim. You must understand that up to this time a terrific war of words had been waged between those who still clung to the theory of Heredity, and those who insisted the disease was infectious.

Prior to this, in 1840, Dr. G. Bodington, of Warwickshire, England, gave his views on a combined system of treatment for consumption, which is closely followed by many to this day. He advocated a life spent in the open air, a liberal supply of proper food and the avoidance of excitement.

Nine years before Villemin's epochal paper was read before the French Academy, Brehmer had established a sanatorium in one of the most healthful parts of Germany, and was endeavoring to prove, by actual results, that with proper management and an abundance of fresh air the disease was curable. Up to his day, since Morton lived and taught the same theory, no one apparently held this view, or, at least, no one had the moral courage to defend it against the unanimous contempt and ridicule of the medical world.

It is through the steadfast courage and tremendous energy and clear mental foresight of these men that the consumptive of to-day has a chance for recovery. In the face of all kinds of difficulties and the most acrimonious opposition, they, alone, stood out for the correct theory of the disease and its treatment along hygienic lines—theories and practice which to-day are proved correct by their success in every part of the world.

Up to this time the champions of the theory of infection had labored under the difficulty of

not being able to produce the original cause of the disease. Their opponents asked them to prove consumption was an infectious ailment by producing the agent of transmission—the germ that caused it. This they were unable to do for a long time. It was known that tuberculosis begins as a growth of tiny whitish lumps on the lung tissue, but what caused these lumps was a mystery so profound that many acute investigators despaired of ever unravelling it. Probably hundreds took the sputum of afflicted patients and endeavored to find therein an active principle, or cause, for the disease; but it was elusive.

All failed until 1877, when Klebs cultivated the virus of consumption on egg albumen. There, before his eyes, he saw growing in his culture tube a strange, fungus-like substance that rapidly spread over the albumen, even projecting beyond the latter's edges up the sides of the glass. He was the first man in the world to look upon the mysterious cause of consumption, and it was only by the barest chance he missed proving that this mold he had caused to

grow in his culture tube was made up of countless millions of germs, or bacilli.

These germs cannot be seen in their native state even with the aid of the most powerful microscope. They must be stained red in order to become visible. Understand, up to this time no one knew there was a germ of tuberculosis. It was simply suspected to exist. How to bring it into view of the human eye was the problem confronting the scientists.

After Klebs had shown the way, many other investigators succeeded in growing colonies of tuberculous germs on egg albumen, and all of them made efforts to discover of what this fungus-like growth was composed. It was not until 1882, however, that the tubercle bacillus was finally separated from its fellows and brought to view individually under the microscope. Dr. Robert Koch devoted the best years of his life to finding a means of staining the individual consumption germ or tubercle bacillus. The germ itself, in its natural state, is perfectly transparent and is undistinguishable unless it is first prepared for examination by what is called a staining

process. By this process, the individual germs are stained red, while everything surrounding them takes on a blue color.

It was Dr. Koch's privilege to find out how to properly stain the germ culture so as to make the bacilli, or germs, visible, and this one accomplishment would have been enough to make his name immortal! No layman can have any idea of the immense amount of labor involved in determining the exact method necessary to bring these tiny little units within the scope of the human eye. Since Dr. Koch's work is done, any well-trained medical student can demonstrate the presence of the tubercle bacilli in a speciman; but previous to Koch's publishing the details of the process this task was greater than the combined intellect of the scientific world could compass.

The champions of the theory of infection were now able to prove their case, for when asked to show the cause of consumption, they could point to that tiny rod, stained red in the field of the microscope, which, as Koch proved positively, causes consumption: for consumption

is impossible in a human being unless this germ is present. Understand, it is not always found in every case! Sometimes the sputum (spit) of an acknowledged consumptive contains no bacilli, but this is not because the germs are absent from the lungs: it simply means that, for some reason or other, they are not being expelled.

The opponents of the theory of infection were not entirely routed by the discovery of Koch. They were forced to admit that consumption, or tuberculosis, was a germ disease; but they contended, and with much show of reason, that the discovery of the germ did not prove it entered the body from the outside. They insisted that an hereditary tendency toward consumption might mean that the body was able to create these germs within itself spontaneously. In other words, the power to create the germ, which, by the way, is not of animal but of vegetable origin, was transmitted from father to son. It remained for Cornet to finally move these conservatives from this last position. He advanced the view that the bacilli were dust borne, and by

a series of ingenious experiments proved the mode of infection to be as he supposed.

In one of these experiments forty-eight healthy guinea pigs were placed at various heights above the floor of a room in which a quantity of dried sputum was scattered about. The room was swept vigorously, and clouds of dust penetrated to every corner. After a proper interval the guinea pigs were dissected, and in all except one the lungs were found to be tubercular. It is due to this, and numberless other experiments of a similar character, that anti-spitting crusades are being carried on in nearly every civilized city in the world. It is supposed that the sputum dries on the sidewalk, and is carried by the wind into the lungs of healthy persons, infecting the latter just as the guinea pigs were infected in Cornet's experimental chamber.

In such cases the test known (to physicians) as the albumen test is of much value in determining the true nature of the disease.

About the same time Cornet was carrying on his experiments, Flugge, another German scientist, was endeavoring to prove that the coughing

and sneezing of tubercular individuals was the means of carrying the disease to non-infected people. By a series of experiments, never surpassed for delicacy and difficulty, he eventually proved that when a consumptive coughs unrestrainedly into the air, he projects minute droplets which carry germs which may remain floating in a room where the air is undisturbed as long as ten hours, and carry a distance from their original source of from fifteen to one hundred feet. It is because of Flugge's experiments that modern consumptives are instructed to hold a cloth, or at least their hand, before their mouth when coughing or sneezing.

At about the time Koch discovered the tubercle bacilli, Behring and other scientists were developing serum-therapy, or the treatment of germ-caused diseases by blood liquor, or serum, taken from animals purposely inoculated by the particular germ of the disease to be treated. These serums were found to act as antidotes to the poisons generated by the disease germs within the infected person. One of these serums, the diphtheria anti-toxin, had proved so wonder-

fully effective that the profession turned to this form of treatment with unanimous accord, convinced that, at last, had been found the way to cure every infectious disease. An anti-toxin for tuberculosis was eagerly sought, and a few years later Koch's Tuberculin was brought to the notice of the profession, and, backed by the great name of its discoverer, offered to the world as the cure for tuberculosis.

Why Tuberculin did not come up to anticipations will be explained elsewhere. I merely mention it here as the last event in the formal history of Tuberculosis.

The partial failure of Tuberculin threw back the treatment of tuberculosis almost to where it was left by Hippocrates. What a comment this circumstance is upon the disappointments that attend human endeavor. After thousands of years of study, after the expenditure of an incalculable amount of labor, although man had advanced to an intimate knowledge of the disease, and its mode of causation, that far more important question, how to cure it, still begged an answer.

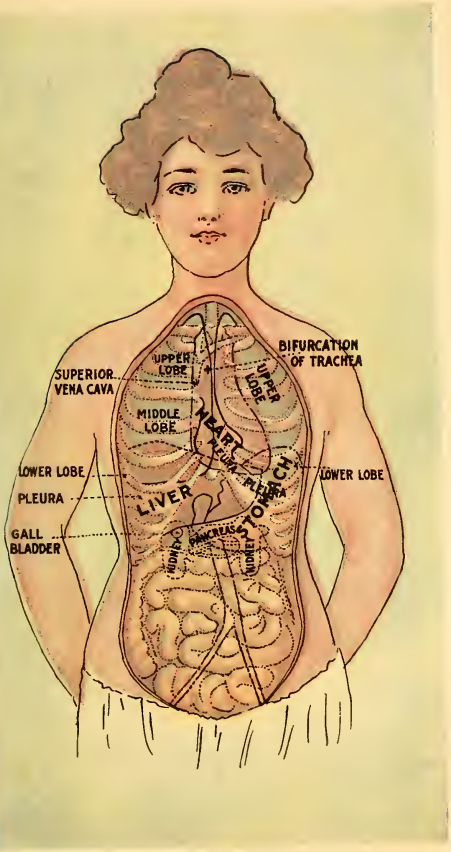

PLATE I.

Illustrating the normal position of the internal organs.

Busy minds pursued the inquiry, however, with unflagging zeal. Hardly a day passed but some physician proposed a new remedy. In 1886, Cavagnis claimed good results with a mixture of sputum and phenol. In 1897 Lemery and Schroeder prescribed the cooked and powdered lungs of a fox. Jaeger and Burnett administered powdered human lung, and, in 1893, Rodet recommended tubercular glands as a sovereign remedy. Richet and Varicourt used muscle plasma, and other things highly recommended at the time by their advocates were the various secretions of particular animals, especially the blood of dogs and goats. As late as 1906 Peter Patterson prescribed the broken-down caseous part of the diseased lung, and in the same year, Krause injected into his patients sterilized sputum. None of these so-called remedies secured any recognition among the profession at large and have gradually been forgotten.

In the endeavor to discover a cure for tuberculosis, the bacillus itself has been subjected to innumerable analyses. It has been split up into its component chemical parts a thousand times

in the hope that the result of such analysis would be the discovery of an active principle, which could be used in concentrated form to combat the disease.

It was during these later years of world-wide investigation that Dr. Yonkerman, of Kalamazoo, Michigan, U. S. A., began his experiments. One of his experiments was performed on a number of cattle, which had been condemned by the State Live Stock Sanitary Commission as tuberculous. Treatment was administered to these animals for several weeks by Dr. Yonkerman, when they, having apparently recovered, were killed, and post-mortems performed. The surgeons making the experiment were astounded to find the supposed tubercular organs completely healed and apparently sound and serviceable.

Dr. Yonkerman next experimented upon himself, in order to prove that the medicines used produced no bad effects when taken within the human body. On the contrary, these investigations demonstrated its influence was decidedly beneficial.

Success still attending these researches into the nature of the new remedy, Dr. Yonkerman was persuaded to permit it to be used in a number of cases of lung trouble in human beings. The results again establishing the efficacy of the treatment beyond doubt, Dr. Yonkerman was strongly urged to take such steps as would place it within the reach of the public at large, and the method of treatment now known the world over as the "Tuberculozyne System of Treatment" is the result.

Since that day, because of its low cost and the wide publicity it has received, hundreds of sufferers in all stations of life and in nearly every country in the world have experienced its benefits, as is shown by the records and personal statements of patients who have recovered from the various forms of lung trouble, including many serious and advanced cases of tuberculosis.

Until the true character of tuberculosis was understood, and Cornet and Flugge had shown the method of its transmission from one person to another, no scheme of prevention, or prophylaxis, was recommended, or even imagined.

Afflicted persons expectorated, coughed, sneezed, and otherwise disseminated the germs, unrestrained by either personal or social considerations. It is now well understood by those who are informed, that the most dangerous person in a community to-day is a wilful, perverse, or ignorant consumptive; a person who, knowing that he is scattering the seeds of the disease, deliberately continues to do so.

As a consequence of the danger which improperly cared for sputum unquestionably is to the community at large, the authorities have seriously considered repressive and coercive measures, directed at the individual consumptive; and in certain quarters these protective measures have been put into effect and are being administered by the authorities with absolute impartiality.

All commend restraint of such diseases as cholera, smallpox, etc., for the reason that these diseases are self-limiting. Not under any circumstances do they last more than a few weeks, and then the patient is released from the strict, but wholesome, regulation to which he has been subjected by law; but consumption is a chronic

disease that persists, in the majority of cases, for the better part of a lifetime, unless the disease is arrested and cured by a proper system of treatment.

Unless consumptives themselves prevent its spread it will probably always exist, through the scattering abroad of the germs produced in their own bodies, and therefore if we are to conquer it —make it as rare as the black typhus which decimated Cities and States a few hundred years ago —consumptives must stop their promiscuous spitting; but that done, the chief and practically only danger of consumptives to their healthy associates is abolished.

There is, of course, the possibility of contracting Tuberculosis through infected milk and meat from cattle afflicted with Bovine Tuberculosis, as has been proven by a long series of investigations made by the Royal Commission appointed by the late King Edward of England to study the relation of Human Tuberculosis to Bovine Tuberculosis and to ascertain if the disease can be communicated from animals to man.

In an exhaustive report the Commission states that it found that Bovine Tuberculosis was a distinct and separate disease from Human Tubercu-

losis and expressed the conviction that it is communicable to man. Therefore, great care should be constantly taken to avoid using milk and meat that may have come from infected cattle.

The ideal place to do battle with tuberculosis is at home, where, surrounded by familiar sights and affectionate friends, the patient can concentrate all his energies on the conquest of the disease.

A consumptive, especially one in the earlier stages of the disease, is, everything considered, far better off in his own home than he would be in the average sanatorium, provided he is properly advised how to order his daily life, and has sufficient interest in his own welfare to follow instructions faithfully. This is my conviction, and I believe the conviction of the profession as a whole; excepting, of course, in particular instances.

If proper treatment is begun in time, there is no question about the curability of tuberculosis. In the accompanying appendix are given records of a number of remarkable cases, all treated successfully at home, and these are but a few of the many hundreds of similar cases treated with the Tuberculozyne System of Home Treatment. I

would not have it inferred, however, that all cases of consumption can be cured; for while it is true that, taken in time, there is every reasonable hope that progress of the disease may be arrested and the patient recover, it is just as true that if treatment is delayed too long no power on earth can save.

Statistics show that consumption and associated lung diseases are the commonest of all ailments. A record of the mortality among members of the Prussian Catholic Orders, during a period of twenty-five years, and embracing 74,306 persons, showed two-thirds of them died of tuberculosis. In England there are 60,000 deaths a year, and in America 150,000 deaths are annually attributed to this one disease, tuberculosis.

It is estimated that there are a million and a half people unquestionably affected by the disease in the United States. If these figures are correct, one person in every fifty is a consumptive, with the symptoms of the disease sufficiently definite to make diagnosis easy. But this does not tell the tale. The authorities are of the opinion that in every civilized community not one person in fifty, but nine persons in every ten, are infected with the disease at some time or

other during their lives. Nagali kept a record of the number of times he found evidences of tuberculosis in the lungs of persons who had died of other diseases. The extraordinary result of this investigation was that nine out of ten showed traces of the disease.

Many bad colds, so called, are now considered to be of tubercular origin. This belief has not yet penetrated to the public, to whom a cold is still a cold and nothing more; but we can see that a very much larger proportion of the people must be prone to this disease than has hitherto been suspected, by what happens when some profoundly depressing influence sweeps over a community or nation.

One of the most potent wide-spread influences of this character is la grippe or influenza. This disease, which at the height of some of its worst visitations has had practically the entire civilized world at its mercy, never fails to raise the death-rate of tuberculosis to an appreciable extent. In 1891 an epidemic of influenza started in Russia and within six weeks had reached America. That same year the death-rate in Chicago, one of the

healthiest cities in the world, was far higher than it had been for years, or has been since.

Influenza has a powerfully depressing effect upon the human system. Even the most robust health is apparently no protection from its ravages. Some of the strongest people succumb to it the easiest, and there is little doubt that thousands of slightly affected tuberculous people are hurried to their graves through the pernicious activity of this mysterious ailment. Dr. Seth Scott Bishop, in writing of influenza, uses the most emphatic language. He says, it is more to be feared than smallpox or cholera; "when it does not kill, it blights and withers and leaves its deadly sting to blot out one's sight or hearing or reason, or sows its deadly seeds in other organs to ensure its victim's future maladies."

Many people think influenza is a modern disease chiefly because the epidemic of 1890 was given such wide publicity in the newspapers. As a matter of fact, influenza is as ancient as tuberculosis. History records that the Athenian army in Sicily was ravaged by this mysterious plague of the nose, throat and lungs to such an extent

that it almost brought the campaign to an inglorious end. In 1510 a terrible epidemic of influenza visited the British Isles. The British are said to have died like moths in the flame of a "murrain that passed over the land like an angel of death locking men's breath in their bosoms." All told, there have been recorded twenty severe outbreaks of this disease, as well as innumerable minor ones.

The cause of influenza is unknown, but its symptoms and effects have been so carefully studied that little else remains to be discovered. We find it aggravated by peculiar weather; and long periods of depressing atmospheric conditions are usually found contemporary with an epidemic of this disease. Some suppose it is carried by volcanic dust, and that severe eruptions will always be followed by a local or general increase in the number of cases. After the outbreak of Mt. Pelee influenza was much more severe on the American Continent than it had been for years previous. How it is caused and propagated, however, is merely interesting and not practically important as far as the scope of this book is con-

cerned. The point is that it produces in the lungs and air passages conditions considered ideal for the development of tuberculosis.

The germs of influenza (for it is generally conceded to be a germ disease) cause swelling of the air passages, including the finer or more remote bronchial tubes. Ordinarily the human body is well protected from invasion by tubercle bacilli; but when the inflammation set up by influenza has weakened the resistance of the local membranes, the germ of consumption finds little or no opposition in the tissues, and consequently prospers accordingly. The vitality of the "grip" victim is far below a normal standing, and under such circumstances the possibility that tuberculosis will make serious inroads before it is discovered, or even suspected, is increased.

In the presence of influenza two things may happen: either at that time the tubercle bacilli gain entry and secure lodgment in the body, or bacilli already in the lungs or air passages are encouraged to develop.

If, as Nagali reported and many authorities believe, nine people out of every ten have a touch

of tuberculosis at some time or other during their life, it will be readily seen that an attack of influenza is a period of some danger. Therefore, even if influenza were not one of the most debilitating and distressing ailments we have, it should never be neglected, however mild, for there is no way of telling whether in any given case it is associated with tuberculosis or not. If it be, and the tuberculosis is of a slow type, we may have one of those cases of influenza, common enough, as everybody knows, which the sufferer, as the public usually expresses it, "never gets over."

Lingering cases of influenza may be tuberculous in character. The tuberculosis, in such a case, is likely to be of a mixed, obscure or generalized type; to wit: such la grippe or influenza invalids often complain of after-effects of their ailment, such as loss of functional power, running of the ears, gradually increasing weakness, mild bronchitis, head pains, continuous fatigue, affections of the joints and muscles, and, especially, stomach trouble.

It should be noted that practically all these general symptoms may be found in the tubercu-

lous. What I mean is, that not all these symptoms will be found in a majority of cases, but that some one, or more than one, of them will be found in the consumptive person. The stomach symptoms are particularly important. Von Behring, one of the greatest physicians the world has ever known, claims that tuberculosis always gains entry into the system through the stomach, and there is no doubt that a vast amount of tuberculosis begins with the symptoms of dyspepsia.

Since influenza begins with, or develops, symptoms practically identical with those seen in a dyspeptic type of incipient tuberculosis, any person who is afflicted with stubborn indigestion, after an attack of influenza, should take immediate measures to recover his health, by adopting a thorough course of treatment calculated to build up the strength and increase the vitality to a normal standard; for, as far as we know, no man on earth is able to say positively that such a case is not incipient tuberculosis. Remember this: tuberculosis may be present, and even considerably advanced, and yet no examination of the sputum will prove its existence. Nevertheless,

there is no truth in medical science, so absolutely beyond controversy, as this which follows in Lindsay's language: "The greatest hope of the consumptive consists in the early detection and immediate radical treatment of his case."

The Tuberculozyne System of Treatment is designed to meet just such indefinite cases as these and is recommended where doubt exists as to whether the affliction is actually incipient tuberculosis or one of sore and sensitive conditions of the lungs and air passages due to non-tuberculous causes. It can therefore be used by the influenza sufferer with the confident expectation that he will receive decided benefit. If the case is one of influenza, pure and simple, the patient should be as anxious to recover from it completely and absolutely as if he knew that it was complicated with tuberculosis; for, as Dr. Bishop points out, even if it does not develop into tuberculosis, it may result in some other lasting injury to the health, almost, if not quite, as serious. On the other hand, though it may not be provable, if the influenza be complicated with tuberculosis, the patient has the satisfaction

of knowing that the Tuberculozyne System of Treatment comprehends both the tuberculous and non-tuberculous affections of the air passages.

What has been said regarding the relationship of influenza and consumption might be applied word for word almost to catarrh and consumption.

Both influenza and catarrh are accompanied by stomach disturbance. Tuberculosis often begins as a dyspepsia. The catarrhal symptoms of the three are identical in many cases. When can we say that an influenza with stomach disturbance, or a catarrh with stomach disturbance, is not the dyspeptic type of tuberculosis, with catarrhal symptoms? It is a very difficult situation for the diagnostician. What shall we say, then? That a case of ordinary catarrh with associated stomach trouble is not tubercular unless bacilli are found in the sputum? Undoubtedly if we took this position we would be correct in a large number of cases, but *which* cases? How would we be able to distinguish the non-malignant from the malignant symptoms?

Another fact should be taken into consideration: the bodily health is never prime in the person who is catarrhal. The catarrh itself is proof that the vitality has been lowered, and identically the same constitutional condition would be present if the hawking, spitting and running of the nose were of a tubercular origin and not common, ordinary catarrh, so-called.

If influenza, through its debilitating effect upon the air passages, is a common source of danger to those who are inclined toward lung diseases in general and tuberculosis in particular, it seems to me also important that catarrhal symptoms should be given due consideration and early treatment.

Dr. Camac Wilkinson states the case in the following extract from his book on Tuberculosis:

"I found again and again, in the history of my cases, that in the early stages of their disease they had consulted a specialist for the throat, and he had told them that they had catarrh, but it was NOT SERIOUS. The terrible sequel in at least a score of cases that consulted me A YEAR OR MORE AFTERWARDS should be an everlasting

PLATE II.

Illustrating the distribution of the bronchial tubes in a normal lung. The light-colored branching tubes are the bronchial tubes, and the blue color indicates a part of the pulmonary artery.

warning to those specialists, who on a haphazard diagnosis called the FIRST STAGE OF TUBERCULOSIS BY THE FALSE NAME OF CATARRH."

In an appreciable percentage of cases of early tuberculosis, the disease first manifests itself as a succession of colds in the head. "Colds" are simply another name for catarrh. But this kind of "cold," this sort of catarrh, is serious indeed, though not so considered at first. Later on, when these nasal catarrhs or "colds in the head" penetrate deeper into the lung structure and become "colds on the chest," their true nature is more obvious.

There are many people who have colds at regular seasons every year. With each repetition these colds become a little more stubborn. Finally there comes a year when the cold does not break up as usual with the advent of warm weather, but persists into, and perhaps through, the hot months of summer, causing considerable doubt and apprehension in the mind of the sufferer. Not a few of these people call themselves "hay-fever" victims, for there is a spring hay-fever as well as a fall hay-fever, remember.

After cough and chest pains or soreness develop, many such cases eventually visit the doctor, with the request that he cure them of their bronchitis. They see the trouble has gone beyond a simple catarrh, and their natural conclusion is that bronchitis has developed. It may very easily be bronchitis, for bronchitis is simply catarrh of the bronchial tubes. On the other hand, it may be tuberculosis, as Dr. Wilkinson very plainly declares. This is the unfortunate, because unsuspected, situation of some of the people who neglect periodical colds in the head. What is to be done in such a case as this? Treat the bronchitis, so-called, symptomatically with rock and rye and a chest pad, or go in at once for a searching, deliberate, comprehensive system of treatment? The latter may not cost any more, if as much; and if it result in a perfect recovery of health, such a result will be its own justification to whatever man-given name (bronchitis or tuberculosis) the original lung disturbance was entitled.

We record with reluctance, nevertheless record it we must, on the authority of the most eminent

men in the medical world today, that the majority of cases of tuberculosis in its early stages are known by some other name.

I do not wish to make it appear that every little cold is tuberculosis: this is not my intention. What I do wish to emphasize is the vital fact, paradoxical as it may seem, that the time to begin the treatment of tuberculosis is, emphatically, that time when it cannot be told with certainty whether the disease is present or not.

There is just this to be said about it. If the case be one of incipient tuberculosis, and the attack is so mild that all methods of diagnosis fail, or the symptoms are so trifling as to raise not even an idea of tuberculosis, it may go on gradually getting a little worse from day to day, or month to month, but not so radically worse as to cause real anxiety, until suddenly confronted by the telltale hemorrhage, an awful chill grips the heart of the victim. Then what would they not give for those wasted months when the dread visitant might have been stayed, or altogether overcome, and perhaps with comparative ease!

This would mean that every case of stubborn

catarrh, every case of bronchitis, every case of influenza should be treated by the most scientific system of treatment obtainable for the lungs.

The catarrhal inflammation may advance up the eustachian tubes, which are the little passages leading from the throat to the ear cavity. These tubes are barely the diameter of a fine bristle, and therefore a very slight catarrhal inflammation is sufficient to close them entirely. Then what do we have? Ear noises, sounds like the ringing of bells, hammering on anvils, the agonizing sensation of a ceaseless dropping of water. Or, perhaps, the catarrh may become hypertrophic, in which case the tender turbinated bones which you can feel with your little finger may become diseased and rot away. Or, we may have a thickening of the vocal cords, known by the name of "clergyman's sore throat," which in the case of people who earn their living by means of the voice may be a very serious matter indeed.

Whether these serious consequences eventuate or not, catarrh is always an embarrassing ailment, and often accompanied by an offensive breath.

If the catarrhal mucus is not expelled from the mouth, it drops down into the throat, and generally is swallowed, especially during sleep. Upon reaching the stomach, being highly obnoxious to that organ, it results naturally in a form of indigestion, which of course, cannot be wholly relieved until the cause is removed. At first mild, this dyspepsia tends to grow worse in time, and becoming a settled condition, so to speak, of the digestive organs, may persist even after the catarrhal symptoms have disappeared.

When the catarrhal inflammation penetrates into the large bronchi, and particularly into the middle bronchi, or air passages of the lungs, we call it bronchitis. If mild, according to Lindsay, the symptoms of bronchitis have little significance, but if they become more severe, he says, they may point, not to a beginning of consumption merely, but to a wide and serious tuberculization of the lung. In such a case the "patient presents some of the usual bronchial symptoms—cough, expectoration (spitting), shortness of breath, or pain in the chest; but there are no physical signs." In other words, to all intents

and purposes, a true case of tuberculosis is imitating all the ordinary symptoms of a non-tubercular bronchitis.

Sometimes it is very difficult to make the distinction. The leading differences are: in bronchitis the chest is often rounded, in consumption flat and depressed; in bronchitis the pain is usually on both sides of the lung, in tuberculosis, if there be any pain, it is usually confined to one side, and is then observed, either just below the collar bone, under the shoulder blade, or as a sort of girdle pain extending from the shoulder round the body under the arm pits just above the waist.

On a general survey of a minor case of bronchitis nothing appears to be changed. But as the disease gains in severity the face may become swollen, and the cheeks, lips, ears and fingertips assume a bluish tinge, which deepens characteristically on slight exertion. The patient often pauses for breath when speaking and talks in a disconnected manner. A person in an advanced tubercular condition seldom suffers in this way, although in the earlier stages of the disease the

disturbance in breathing and speaking may be very similar to that just described as characteristic of bronchitis.

A very expert physician might be able to distinguish a bronchial cough from one due to tuberculosis, but it requires a fine ear, and any attempt to rest a diagnosis upon this symptom is apt to end disastrously, because the cough is so similar in tubercular and non-tubercular inflammatory conditions that even the long training and constant opportunities of the specialist would not justify any reliance on the sound, frequency or intensity of a cough as a means for diagnosis.

Unfortunately the sputum is quite as misleading as the cough. Certainly the expectoration of bronchitis is likely to be tough, scanty and viscid, while that of tuberculosis is usually rather free and easily produced; but on the other hand, the bronchitis sputum may be almost identical with that of consumption so far as its external appearance is concerned, even to the trained eye, loose, abundant and of a reddish, greenish or yellowish tinge.

The latter type is most likely to be found in

cases of bronchitis which have been neglected until the inflammation has penetrated the finer air passages or capillaries. How fine and delicate these tubes are may be judged from the fact that the red blood corpuscles are forced to travel through the adjacent arterioles in single file. In other words, they are infinitely finer than a hair and yet so perfect in their action that, when the individual is in a state of health, they perform their duty of helping to aerate the blood continuously.

When the catarrhal inflammation penetrates these tiny capillaries, it throws everything into disorder. The walls of the tubes lose their firmness and bulge outward. In the space thus formed, the inflamed membrane deposits continuously a secretion which gathers gradually until the cavities are filled; then the accumulation produces an irritation of the local nerves, and the patient secures relief by a severe fit of coughing. This sometimes lasts for a considerable period, during the course of which a quantity of foul-smelling, disagreeable-looking, greenish, reddish, or yellowish sputum is either discharged

from the mouth, as is proper, or, as has been said before, is swallowed with disastrous consequences.

In an advanced case of this character, the chest may sink in at its lower extremity or around the base of the sternum, commonly called the breast-bone, and the spaces between the ribs also may become quite prominent. Here we have a characteristic picture of the tubercular chest, although as a rule the latter usually begins to sink below the collar bone or on one side of the body only. In tuberculosis the lower portion of the chest is not usually depressed until the disease is very far advanced.

The treatment of chronic bronchitis is almost identical with that of advanced tuberculosis. The patient is instructed to clothe himself warmly, and to avoid the inclemencies of the weather. At the same time he must keep in the open air as much as possible, and breathe deeply at all times of pure fresh air.

The diet of a bronchial person is chosen with the same purpose in view as governs the regulation of that advised in cases of tuberculosis.

Both of these forms of lung inflammation are a severe strain on the constitution, and the strength of the patient must be maintained at all hazards. The diet must have an immediate effect on the nutrition of the entire body. It must also be of such a character as to be acceptable to the stomach and free from gas-forming elements, for the simple reason that in bronchitis, as in tuberculosis, stomach disturbances are often quite marked, and may interfere seriously with the progress of the patient toward recovery.

The medical treatment employed is much the same in these two types of lung inflammation, and has for its chief purpose the increase of bodily strength and vigor and the healing of the inflamed tissues.

A person suffering with an uncomplicated bronchitis can, consequently, adopt the Tuberculozyne System of Treatment with every reasonable expectation of its acting in his case favorably.

The Tuberculozyne System is not a one-medicine treatment, which the patient takes in teaspoonful doses after meals, three times a day, as per the usual plan; but it consists of tubercu-

lozyne, which is the chief item in the treatment, and also a complete management of the case, including full instruction as to diet, mode of life, sleeping, bathing, etc.

In short, nothing that can contribute to the welfare of the patient is omitted, and the patient is assured that in adopting this treatment he will receive the benefit of every measure, hygienic or medical, which the long experience and intimate knowledge of the disease possessed by the physician in charge of the case indicates as valuable and necessary.

There is such a thing as false tuberculosis and false bronchitis. Such imitative symptoms are of a hysterical character, and usually exhibited by persons of a highly nervous temperament with other hysterical symptoms, such as dizziness, phantom pains, erratic ideas, and a generally unbalanced condition, and are a more or less common occurrence. In these cases there is no actual tubercular disease, not even a positive catarrhal condition of the lungs, but the symptoms of these two diseases are very much in evidence. There may be expectoration, spitting, cough and a very

decidedly rundown condition of the entire system. The patient may even lose weight persistently, a symptom very certain to be attributed to tuberculosis under the circumstances. If the case is examined carefully, however, it will be found there are no variations in the temperature, no rise at night, and no fall in the morning, as there would be if a moderate tubercularization of the lung were present. These cases, however, are quite rare.

The most striking difference between a true consumptive and the false, hysterical case is that the latter is moody in mind, downhearted and well-nigh despairing. The patient dwells upon his symptoms day and night, imagining the direst consequences and anticipating death, no less. On the other hand, after the first few weeks of depression, the average true consumptive recovers his buoyancy of mind, and is thereafter sanguine and hopeful. No doubt you can recall instances of people who succumbed to the disease, whose last words almost indicated perfect faith in their eventual recovery.

I have mentioned this peculiar nervous variety

of pseudo-tuberculosis, because it is sometimes mistaken for true tuberculosis. They are thin, weak, coughing, complaining invalids. They suffer on account of their nervous symptoms as keenly as though they were actually infected; nay, some seem to suffer more. These people will never get well unless the situation is explained to them, and they come to see the necessity for a careful and systematic building up of their nervous systems. When their nerves have been made strong and vibrant once more, the lung symptoms, of course, will disappear.

They can take, as they do, quantities of cough medicine and not benefit a particle; and after that statement it will seem strange for me to recommend the Tuberculozyne System of Treatment to this class of patients. I do so because the Tuberculozyne System is essentially a strength-builder. Tuberculosis is fought by increasing the nutrition of the system as well as by destroying and removing the tubercle germ. The patient must be fed and fortified. His vitality must be increased. This is accomplished by adopting such measures as are best calculated to cause the digestive organs

to do their full duties. When digestion becomes normal and complete, the food is turned into powerfully re-vitalizing elements. The part of the body that feels the benefit of such a fortifying method of treatment before all and more than all other parts is the nervous system. The nerves of the hysterical patient, among whom, by the way, women largely predominate, are erratic, unreliable, or pain-causing, because they are underfed.

The proper way to treat neuralgia, for instance, is to increase the digestive power of the patient. A nervous case is often complicated by a catarrhal inflammation of the nose. In such instances the direct action of the Tuberculozyne System of Treatment on the air passages themselves tends to relieve annoying symptoms more rapidly than would be possible with any less complete and comprehensive method.

Some of these nervous cases eventually become asthmatical. Asthma is now generally acknowledged to be a nervous disease. The nerves become irritated, as it were, and when their natural resistance is reached, react in the shape of a spasm, which closes the air passage. The suffocating

symptoms known as the asthmatic paroxysm result. For some unknown reason attacks of asthma usually come on in the early morning hours. They begin with a tightness in the chest, a short dry cough, a wheezing and whistling of the breath, and much anxiety of mind. The inspiration, or drawing-in of the breath, becomes either very short or is much prolonged, and the patient gasps and pants in a pitiable fashion. His face grows swollen and purple, tears run from his eyes, and his body is bathed in perspiration. He may sit on a chair with the back grasped in his two hands. This position is assumed because it helps the sufferer to bring all the muscles of respiration into play. An attack usually lasts from one to six hours. Then the symptoms gradually subside; cough returns, and the expectoration becomes more abundant. The patient spits up peculiar little pellets of gray mucus, which are so round, firm and translucent that they have been given the popular name of "asthmatic pearls."

The Tuberculozyne System of Treatment has been used with success in asthma, because it is a scientific treatment designed to remedy the ner-

vous disturbance which is the exciting cause of the trouble. Asthma is a disease on which quacks flourish, for it is easy to dull the irritated nerves by means of opiates, such as morphine, opium and chloral. Many asthmatics, after taking such remedies a week or so, become very enthusiastic over the results, for it seems as though their ailment was entirely overcome, and that most easily and pleasantly. For the first two or three weeks the opiates have a delightful effect on the nervous system, giving it a calmness and peace most uncommon. But we know that this is a deceptive state of affairs. Soon these opiates, so innocently taken into the system, will begin to bring it under their harmful influence.

A habit may be formed, worse by far than the original disease. Now the patient finds himself on the horns of a dilemma. If, realizing the effects of his remedy are worse than the ailment, he endeavors to discontinue the former, he may either find himself unable to do so, or threatened, if he does succeed, with a return of the asthma in a form more severe than before.

Hence, a sufferer from asthma should avoid

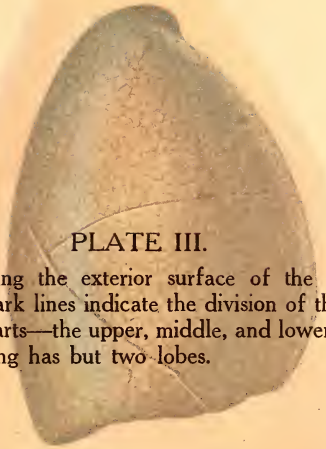

PLATE III.

Illustrating the exterior surface of the normal lung; the dark lines indicate the division of the lung into three parts—the upper, middle, and lower lobes. The left lung has but two lobes.

bottled "dope" of this character with the greatest circumspection, because more often than not it contains drugs very deleterious to health.

Regularly qualified physicians only should be given charge of such cases, and preferably they should be men who are specialists in ailments of the pulmonary cavity.

Tuberculozyne Treatment contains no opium, chloral, morphine or similar narcotics. Under no possible circumstances can it produce a habit!

It is a wholesome system of treatment combining the best hygienic measures known to the profession, and its medicines are not designed to smother up symptoms by deadening the nerves, but to reach the cause of the disease.

There is another common lung ailment which should be mentioned in this connection, because of its common association with tuberculosis. This disease is known as pleurisy.

The most striking symptom is a severe, cutting, lancinating pain in the chest, felt usually just below the breast on either or both sides of the thorax, whenever the patient attempts to breathe a little deeper than usual. As a consequence, a

person suffering with pleurisy breathes as shallow as possible, and makes his inspirations and expirations so short that he does not seem to be breathing at all. He also hunches his shoulders, and contracts his chest, with the object of minimizing the pain as much as possible.

Pleurisy is an inflammation of the serous sac which surrounds the lung and also the lining membrane of the thorax. In health this membrane secretes a thin fluid, which enables it to glide easily over the adjacent parts when the lungs move up and down. Pleurisy interferes with this arrangement, and causes the membrane to become extremely sensitive.

The relationship of pleurisy to tuberculosis is a much debated point, but a very important one. Lindsay says: The relationship of this disease to consumption is "one of the most vital outstanding questions of practical medicine." It has not been decided as yet whether or not pleurisy is caused by the tubercle bacilli. It is the one question the profession would like very much to settle, for a very large number of people suffer with pleurisy every season, and if it could be

positively determined that it was always tubercular then it would be possible to begin antitubercular treatment at once, without waiting for any other later sign of the disease. In other words, pleurisy would constitute one of the earliest, if not the earliest sign of tuberculosis, and make it possible by its timely warning to save many a case that is now neglected until it has become incurable.

Unless the result of some accident or injury to the chest, or an acute attack, it is very generally an attendant in intracellular disease of the lung.

There is much difference of opinion as to the percentage of cases of pleurisy which eventually develop signs of tuberculosis. The more conservative investigators say one-third; others declare this proportion too low, and place the figure at one-half. The great Landouzy insists that 98 per cent. of all cases of pleurisy not only develop tuberculosis, but are tuberculous in origin. If what he says is correct, and this man made a special study of this particular phase, then no case of pleurisy should be neglected or given merely local treatment. It should be placed

on an antituberculous régime at once. For this very good reason: investigations have shown that if a patient makes a good recovery from his pleurisy, the danger of tuberculosis developing later is much reduced; whereas, if the case be neglected or an imperfect recovery is made, the danger from tuberculosis is much increased.

Pleurisy may often be so mild as to cause but a trifling inconvenience, but there is reason to believe that the severity or otherwise of the pleuritic attack has little influence over the possible later development of tuberculosis. A severe attack of pleurisy from which a perfect recovery is made may turn out better in the end than a very mild attack, which, because of its very mildness, is treated with indifference, and allowed to degenerate into a chronic condition. Both types may be tuberculous, but the radical treatment of the severe case may so increase the vitality of the system that it is able to overcome not only the pleurisy but annihilate the tubercle bacilli as well. On the other hand, a neglected mild case of pleurisy may develop into a severe case of tuberculosis, for the simple reason that nothing is done to re-

tard the development of the first few scattering germs.

What has been said applies, not only to the person who has a present case of pleurisy to battle with, but to those who have had attacks in the past. If such a person is now entering upon a period of indefinite ill health, with perhaps stomach symptoms, a growing muscular weakness, incapacity for effort, and a general feeling of "malaise," it might be well for him to give his condition immediate and serious consideration. I feel it my duty to point out that this mysterious failing of health, this unaccountable weakness, this growing loss of ambition and interest in life, may be the result of that long-forgotten attack of pleurisy. I do not wish to frighten any one, and if the present indisposition is due to natural causes, no one should be frightened by what has been said, for such an indisposition can easily be overcome, and should be overcome; but if simple measures, such as a little more care in the mode of life, a little more sleep, a little more wholesome food, and such remedies as may seem to be indicated, do not restore the former standard of health,

then a course of treatment as thorough and powerfully strength-restoring as the Tuberculozyne System of Treatment should be adopted at once. For at this stage, if the symptoms be tubercular, if tuberculosis is stealing on the sick one, the damage is slight, and the case offers tenfold greater promise of recovery than can be held out if time is allowed the disease in which to gain a firmer hold.

The fundamental difference between true tuberculous lung trouble and that of a catarrhal or bronchial character is that in the former the tubercle bacilli are always present. This does not mean that it is always possible to prove the presence of the germ. It means that if the case is one of tuberculosis the bacilli must be present in the lungs whether demonstrable or not. The tubercle bacillus is a tiny little rod of which it is said fifty thousand could be placed side by side within the limits of an inch. It is of vegetable origin, in fact, a sort of fungus similar in character to the mould which gathers in damp dark places. If it were possible to destroy all the sputum raised by tuberculous people until all those people were

either dead or had recovered, consumption in the human family would probably cease to exist. As it is, man is the chief danger to man, and as one writer puts it, the most inappropriate associate for a consumptive is a tubercular friend.

It is estimated that the average consumptive spits out from one and one-half to four and one-half billions of bacilli a day, and these bacilli, as we know, may easily be carried into the body of a healthy person through the medium of dust-laden air breathed into the lungs.

NOTE

The appendix mentioned in this book is printed in separate form, and should be preserved for purposes of reference.

If lost or mislaid, write for another copy, which will be mailed free of charge.

THE YONKERMAN COMPANY,
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PART II

PROCESS OF INFECTION

GENERAL METHODS OF DIAGNOSIS

THE LEADING SYMPTOMS OF TUBERCULOSIS

SUCCESSFUL TREATMENT

BACK TO HEALTH

THE tubercle bacillus when deposited in warm, dark places, such as the corners where careless people usually spit, is very tenacious of life. Experiments have shown that it is still living and dangerous in such locations from six months to a year afterward. Most species of germs are easily destroyed, but the tubercle bacillus is not of this class. It resists many of our more powerful disinfectants, and even heat below a hundred centigrade has no effect upon it. At 15° below zero it is as virile as at any temperature above that and below 180°. Fortunately, fresh air destroys it in from one to five days, and bright sunlight in a few hours and, were it not for this fact, the human race might have succumbed to the ravages of the disease long before this. It is for these reasons that consumptives are instructed to breathe deeply and regularly, and also to keep in the bright sunlight as much as possible. The tubercle bacillus is found everywhere; they may be on the clothes, the skin, in the hair and within the nostrils of perfectly healthy individuals, when they may have been in contact with tuberculous people.

When the germs succeed in entering the body they do not always cause tuberculosis. They are now in a dark, moist place, of just the right temperature, 98°. But the human body is by no means defenceless against the onslaught of the tubercle bacillus. The mucous membrane is protected by countless microscopic hairs whose purpose it is to catch all intruders and hold them safely until secretion of the tissues can wash them away. If the germ succeeds in getting into the lungs its struggles are not yet over, for it has to escape secretions that are powerfully antiseptic. Even if it reach the membrane lining the air passages, it no sooner gains a foothold than all the resistive power of the system is enlisted against it.

We now come to a somewhat confusing fact, viz.: that the chief danger of the tubercle bacillus is not its presence in the lungs, but that the efforts of the system to overcome it may be ineffectual. It is the frantic but incompetent efforts of the body itself which cause the destruction of lung tissue. Let us assume a tubercle bacillus has gained a final resting-place on the membrane of one of the finer air passages. Immediately the

system raises up around it a tiny whitish lump known as a miliary tubercle. The bacillus is imprisoned inside this little lump, and if all go well, if the vital force of the system is equal to the task, this lump will gradually harden into a fibrous, or musclelike tissue.

Within this tiny lump a terrific conflict is going on between what the histologists call a giant cell, or phagocyte, and the bacillus itself. If this is to be a case of abortive tuberculosis, the giant cell digests its dinner, the germ becomes no more, and its fibrous, lumpy prison is gradually absorbed back into the blood, leaving a harmless scar behind.

But if the bacillus has gained entry into a weak and debilitated body, one, let us say, in which the field has been prepared for it by a long-neglected catarrh, or even measles or typhoid, then the same conflict takes place, but with a very different result.

It is the life-saving phagocyte that meets defeat, and thereupon breaks down, forming, instead of a healthy fibroid scar, a cheesy, mushy mass, called "caseous matter." The victorious bacilli increase in number. All around the original bacillus

other miliary tubercles spring up. In time these also arrive at the caseous stage of degeneration, and flow together as little separate drops of water may run into one large drop. In this way a giant tubercle, which may attain the size of a marble, or even an orange, is formed.

Let us suppose that at this stage the patient takes alarm and begins a deliberate course of treatment. Let us also suppose that this treatment has an immediate effect for good upon the vitality of the system. The digestion is strengthened so that the nutrition of the body as a whole is increased. The blood is purified and the nerves calmed and strengthened. Under such favorable circumstances a turn for the better may soon take place. That fibroid change may begin, thus shutting in within a tough muscular wall the millions of bacilli concentrated within the tubercle. If we can now raise the antiseptic quality, or, as it is called, the opsonic index of the blood to such an extent that the blood soldiers or phagocytes can re-enter the conflict, revitalized and more active than before, we may succeed in destroying the bacilli within the tubercle itself.

In such a case as the one just described, there would be, of course, no expectoration, for the pus or liquefied lung tissue would be held securely within the walls of its fibroid prison. There would be, most likely, a certain amount of hard, dry, hacking cough, due to the irritating presence of this hard lump of tissue within the delicate air passages, and there might be, also, a more or less pronounced decline in the general health, but the symptoms would be of an indefinite character, difficult to place, even by an experienced physician, much less the inexperienced layman.

There being no expectoration, there could be no examination of the sputum, and unless night sweats, or a rising temperature, or fever, or that peculiar blocked up sensation in the chest which some consumptives complain of, put the patient on his guard, there is great likelihood such a case as this would be neglected until the third stage of the disease developed. The third stage, so called, is simply the escape of the cheesy mass within the tubercle into the open air passage, and the consequent establishment of a more or less constant expectoration. At first the sputum

will be whitish, stringy, viscid, something like boiled starch. As the disease progresses the sputum may become tinged with blood. Eventually it takes on a sickly greenish, yellow appearance. Careful physical examination of the chest of such a patient would discover the presence of a cavity or a hollow in the lung substance where the tubercle had been before it broke down. We now have an angry and stubborn ulcer which slowly, or more rapidly, according to the character of the case, enlarges itself at the edges. There may be, of course, in some cases a number of tubercles in different parts of the lungs, all destined to break down eventually in succession or simultaneously. These form ulcers which gradually approach each other until in time they may run together, forming cavities which may be equal in size to one or more lobules or lobes of the lung. We then have a state of affairs aptly described when one says of a consumptive acquaintance that he has "only one lung left." The affected lung of such an individual has been literally dissolved and thrown out in expectoration.

Even when matters have come to this serious

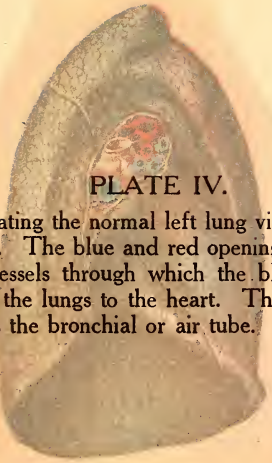

PLATE IV.

Illustrating the normal left lung viewed from the inner side. The blue and red openings are the pulmonary vessels through which the blood passes to and from the lungs to the heart. The light-colored opening is the bronchial or air tube.

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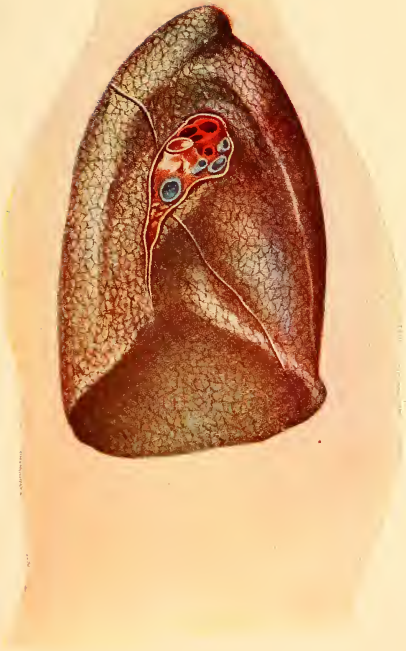

pass, all is not lost, for we now know that even while the tuberculous ulcer is spreading at its edges, the system is making strenuous efforts to heal it, and often succeeds in replacing the diseased tissue with a fibroid growth.

Unfortunately, Nature, without competent help, seldom succeeds in overtaking the destructive ulceration going on at the edges of the cavity. The result is a consolidated lung, part of which is cavity and part active ulcer, part healthy lung tissue and the remainder hard, air-resisting fibroid growth, which is largely impervious to the breath. Consequently smoke and coal dust settle into this tissue, and are thereafter often raised in coughing as a black, sooty phlegm.

While this ulcerating process is going on, the lung tissue around the numerous blood vessels is eaten away, leaving the veins and arteries unsupported. These vessels cross and recross the cavity like the steam pipes in a boiler room. Because the muscles in the blood vessels resist the action of the ulcerative process more successfully than the lung tissue proper, most of them escape injury. If it were not for this it is con-

ceivable that every case of advanced tuberculosis would succumb to an unquenchable hemorrhage. The blood vessels, however, are not absolutely immune, and occasionally the ulcerative process penetrates through their walls, permitting the blood to escape into the surrounding cavities.

As a rule, the first hemorrhage follows some sort of exertion such as sudden stooping, lifting a weight, or climbing a flight of stairs. The exertion raises the blood pressure, that is, the blood stream flows with greater force through its channels. The sudden strain comes upon the part weakened by the tuberculous ulcer, and a gush of blood occurs. Nature usually closes up the rupture in the blood vessel by means of coagulation, which forms a clot and stops the flow of blood. But if a large artery or vein has been attacked and a considerable portion of its wall has been destroyed, the resulting breach may be too large for Nature's clot to close, and the result will be what is known as a fatal hemorrhage. Fortunately, such accidents as this are rare. As a rule hemorrhages are slight in quantity, seldom exceeding one or two ounces.

Thousands of tuberculous people will not admit, many do not even suspect, that they have tuberculosis until the initial hemorrhage takes place.

Then they are anxious enough for treatment, but as all are now well aware, inestimably valuable weeks or months of time have been lost, and the case is no longer an incipient attack, but a well-developed example of tubercularization.

Still, there is hope, even after a hemorrhage has occurred. If only the nutrition can be increased; if we can give the patient a healthy, hearty appetite; induce sound and restful sleep; prevent him from worrying; fill his lungs day and night with good fresh air; bathe his body in the life-saving sunlight; and fortify the blood stream against the toxins of the disease, by the best-indicated remedies, we may still hope for the recovery, even at this late stage.

Many of the reports in the accompanying appendix are from cases that were successfully treated after hemorrhage had occurred.

In order to encourage the vital forces of the body as just described, an essential of the success-

ful treatment is that it shall be able to overcome the poisons of the bacilli circulating in the blood.

Strange as it may seem, it is not the lung ulcer which causes the weakness, the muscular inability, the decline in health. It is the powerful toxins, or poisons, thrown off by the bacilli which create this effect. These toxins profoundly disturb the nutrition. If they are not antagonized and overcome, they will rob the body of its vital strength, and then the ulcer in the lung will have a free hand to destroy its host.

Dr. Brown says that if we produce immunity to these toxins, if we supply the system with an antidote, we could in many instances, perhaps all, overcome tuberculosis with as little effort as we now throw off an unimportant ailment.

This may be the explanation of the remarkable recoveries accomplished by the Tuberculozyne Treatment.

It is most unfortunate that many who are in a more or less serious state of tubercular infection continue to neglect their condition.

No doubt some of these people do not believe they have tuberculosis, for the reason that they

have had their sputum examined, and no bacilli were found. The detection of bacilli in the sputum of a patient settles all doubts at once as to the nature of the disease. Many people are aware of this fact, and have been led thereby into what must be considered a serious error. They have jumped to the opposite conclusion that if no bacilli are found in their sputum they are not tuberculous. But this does not follow by any means! The bacilli are present in the sputa of most cases, but they may be, and often are, absent, even in advanced cases.

We have just explained why bacilli would be absent from the sputum of a person in whom the tubercle was undergoing a fibroid change. It is also absent occasionally in the sputum of acute miliary tuberculosis, or galloping consumption, which, as every one knows, is almost invariably fatal. It is also extremely likely to be absent from the sputum of those mild beginning cases, which of all cases of tuberculosis are the ones which should be put under treatment immediately, for they have, it is everywhere acknowledged, splendid, almost certain, promise of recovery.

It is advisable to make a careful examination of the sputum in all cases where tuberculosis is suspected, for if we find it to contain bacilli, that fact settles all doubt as to the nature of the disease. It is tuberculosis!

But though we use every scientific means at our disposal to determine the true character of the sputum, it must be borne in mind that it is by no means certain we would always find bacilli, even in the sputum of the actual consumptive. I have already explained why the bacilli may succeed in escaping detection.

Recent investigations, however, have demonstrated the almost unfailing presence of albumin in sputum containing bacilli, and since it is rarely if ever present in simple cases of pulmonary (lung) irritation or bronchitis, the absence of bacilli in the sputum with no albumin may be taken as a reasonably safe diagnosis of non-tuberculosis. However, when the microscopic examination shows bacilli to be absent but the chemical test discovers albumin, with perhaps some other symptoms, it is not safe to pronounce the case non-tuberculous. In all such cases a thorough

course of treatment is the only safe course to pursue.

There is, however, another view point about sputum examinations of which note should be taken. If bacilli are found, the announcement is liable to cause much depression in the mind of the patient. As a matter of fact, however, a case of no detectable bacilli in the sputum may be one in which the bacilli are quite numerous. The patient should be made to understand that the disease is by no means beyond hope of cure simply because of the presence of bacilli.

The number of bacilli present are supposed to have some relation to the activity of the disease, but a case is not an unfavorable one though bacilli are numerous in the sputum, provided the constitutional state of the patient is good. On the other hand, there may be few or no bacilli present in the sputum of a patient whose constitutional condition gives occasion for alarm.

Dr. Minor says: "Absolute certainty can only be obtained by discovery of tubercle bacilli in the sputum. No one, therefore, should deprive his

patient of the advantages of early treatment because he cannot demonstrate the germ."

In the absence of bacilli from the sputum, how are we to determine whether a case is tuberculous or not? There are many and varied ways of arriving at a decision, viz.: by inquiry into the history, the general appearance of the patient, and the character of his symptoms. Personal history throws valuable light on a case, and taken in connection with the symptoms present, may afford strong presumptive evidence that the case is tubercular. Please understand that what follows is information of a general, and not of a particular character. It should not be misconstrued or lightly imputed to any particular case unless the evidence is preponderant. We voice this warning in order to prevent any misconception as to his condition in the mind of any reader. It is very essential that one who is tuberculous should be made aware of that fact in order that he may have reason for beginning treatment at once, but it is equally essential that the non-tubercular person shall not get the impression he has the disease and so develop that half hysterical

condition known as phthisiophobia (excessive fear). With this understanding well in mind let us see what the history of the suspected case amounts to.

We should inquire at once as to the character of the occupation. Has the patient been engaged in a dusty, hot, damp or cramping occupation? Is it possible that where he or she works the air is foul and unrenewed for considerable periods? Does he work with the upper part of the body in a contracted or distorted condition, as, for instance, is the case with sewing machine operators, bookkeepers, etc.?

Family history should be inquired into next. Have any of the family, or near relatives, suffered with consumption? If so, who, how long ago, and especially, where? The point of the last question is, that if the consumptive relative lived in the same house or was in frequent or close association with the patient, this fact has a certain value, for, as you now know, under such circumstances it would be comparatively easy for the germ to pass from the one individual to the other. A healthy person who is never exposed to the

germs can not contract tuberculosis, and contrariwise, the more frequently they are brought in contact with the disease, the greater probability there is of infection. As the theory of heredity is now practically abandoned, it may seem strange to place any value on the family history at all. But while direct transmission of the germ is now considered impossible, it is very generally believed that a tendency to the disease can be transmitted by tuberculous parents to their children.

If the patient be the offspring or kin of tuberculous people, and has lived or associated with them, and also is engaged in a confining or unhealthy occupation, you will see at once that the combination of circumstances has its weight in determining whether or not the developing lung trouble be tubercular.

Careful inquiry should also be made as to what diseases, if any, have preceded the present lung disorder. The ailments most often followed by tuberculosis are pleurisy, measles, influenza, whooping cough, typhoid, syphilis and dyspepsia. We have already explained how pleurisy, in-

fluenza, bronchitis and catarrh may be, not what they are supposed, but a mild beginning of consumption itself. This probability, therefore, gives a particular importance to these antedating diseases. In the same way diabetes, dyspepsia and anemia may be either predisposing or early manifestations of tuberculosis. Tonsilitis particularly and throat troubles generally should be inquired about. We should also know whether or not rheumatism and nervousness have been or are present. The reason for this is that tuberculosis is an imitative disease and may show its worst effects, not in the lungs or the air passages, where the symptoms may be very trifling, but in the joints, nerves and blood.

Wilkinson says: "We learn often enough that throat symptoms, blood disturbances, digestive troubles, ovarian troubles, and nervous symptoms without any lung symptoms at all, may give the first clue to pulmonary (lung) disease."

Such masked onsets of the disease are not unfamiliar, by any means. We have all seen examples of young people, particularly growing girls, falling into what is called a decline. Such a con-

dition may be the result of the action of the disease on the blood. Girls so affected are easily tired, easily excited, grow gradually thinner, have a poor appetite, weak heart, increased pulse, shortness of breath, sharp temper, flush readily, especially after meals, and are considerably annoyed by excessive perspiration. But the lung symptoms are frequently so mild as to escape notice.

When the disease assumes a rheumatic form it is said to be due to a saturation of the system by the toxins or poisons generated by the bacilli. This poison, besides causing a more or less profound feeling of ill health, acts identically as any other rheumatic poison would act. It produces pain in the joints, especially the hip and knee. Cramps in the muscles, especially that of the calf of the leg, aching of the thumb, little finger and heel, and possibly a dragging, boring, lancinating backache.

In the nervous type of tuberculosis we must be exceedingly cautious not to give the nervous symptoms an ounce more weight than they are entitled to. Lindsay says, "that a combination of languor, debility, etc." requires cautious inter-

pretation, and that, "in the absence of cough, wasting, temperature changes, fast pulse or hemorrhage, the combination does not give strong foundations for suspicion." What, then, is the cause of the nervous debility? Is it apparently uncaused? Is a previously strong and hearty individual growing more and more nervous, irritable and erratic? If so, can we attribute this condition to worry, overstudy, anxiety, excessive nursing, or disappointment? In that case, and other symptoms do not point toward consumption, we are hardly justified in giving the nervous symptoms consideration. But if the nervous symptoms are mysterious, unaccountable, unexplainable; if they seem to have no real cause; then they begin to be more significant, for it is a peculiar fact that the nervous symptoms of tuberculosis seem to be uncaused, whereas, there is usually good and sufficient reason for the nervousness of general debility.

The nervous type of tuberculosis is associated with a bright intellect. Such patients are very responsive to impulses. It is among this class we find the tuberculous musician, author and pro-

fessional man. The disease usually puts its mark on its victim, and this mark is more noticeable in this class of capable citizens than in any other type. The eye of such patients is usually bright and vivacious,—too bright, in fact; the skin is moist and soft and delicate; the color is high, too vivid, indeed; the movements are quick, the attitude is alert and attentive; but one gets the impression, somehow, that there is a quick limit to the endurance. This is the fact. Such patients exhibit remarkable energy and acuteness, but they soon tire and recover less quickly than would a normal healthy person under similar circumstances.

The physical appearance of a patient often affords important evidence as to the character of his lung symptom. We should observe the chest carefully. Is the clavicle or collar bone, on either or both sides, normal? Does it seem to slant downward? Is there a slope to one of the shoulders, so that it hangs below the level of its fellow? Any depressions should be carefully observed. Depressions or hollows in tuberculosis usually make their appearance around the base of the neck. If a hollow in this vicinity seems to

be growing deeper, the fact should not be overlooked, for hollows in this neighborhood may mean more than mere loss of flesh; they may be the result of the shrinking away of the tuberculous lung.

The patient should be instructed to breathe deeply in order to show whether the rise and fall of the chest is natural or not. In bronchitis, as already mentioned, the expansion of the chest is usually unchanged, whereas in tuberculosis the rise of the chest is often noticeably interfered with. The back of a pronounced tuberculous person is characteristic. The shoulder blade on the affected side may be lower than the other. Both shoulder blades may seem to be pushed outward, giving the impression of a wing. In the more serious cases the spine may be curved, with its concave side facing the affected lung.

In very bad cases, the region of the stomach may be depressed. A deep, melancholy-looking depression immediately below the breast bone meets the eye.

We should next direct our attention to the eyes, hair, finger-tips, nails, teeth, and gums. If the vitality be on the decline, the hair will probably

seem rank and void. The finger-tips will be bloodless or purplish, the nails ridged, the teeth tender and brittle, and the gums pale. If there is pronounced indigestion the tongue also will be affected, raw looking, indented by the teeth, and very flabby.

It must not be forgotten that bronchitis may also affect the appearance of the chest. Bronchitis, in ulcerated and advanced stages, is a debilitating disease, and may so seriously affect the general health as to cause a decline in flesh, when suspicious-looking hollows may form between the ribs and elsewhere on the chest and back. It must also be borne in mind that bronchitis causes hemorrhage, night sweats and a high temperature in nervous and debilitated persons, so that even with such strong and presumptive evidence of tuberculosis as such appearances would appear to be, there is a possibility that the latter disease is not present. Even so, it would not justify a person in neglecting treatment, for whether the disease is bronchitis or tuberculosis, only benefit can result from proper treatment, while neglect and delay may result in serious consequences.

PLATE V.

Right lung from case of miliary tuberculosis, showing inflammation of surface and general enlargement of the entire lung with lines indicating the several lobes obliterated.

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To the above general survey of the physical characteristics of his patient, the examining physician would add percussion and auscultation. To the trained ear, the diseased chest gives forth certain characteristic sounds. It is to these the physician listens through his stethoscope when he taps the chest with his fingers. Liquefied lung, pus cavities, etc., modify the sounds in the lung when the breath is drawn in. The art of interpreting these sounds is called auscultation.

If it be possible to make a direct oral examination of this character, well and good. It may lead to a strong suspicion that tuberculosis is present, but it does not always afford positive evidence. Somehow or another, the average man has gotten the impression that if a physician applies the stethoscope to his chest, taps him a few times here and there, and then assures him he is or he is not tuberculous, as the case may be, that settles it absolutely. The great Strumpell says: "He who lays too great stress on the uncertain results of percussion will often make a false diagnosis." So much for percussion. Fowler and Goodlee wrote in their monumental work on tuberculosis: "The

observer must beware of relying on auscultation, with its many fallacies. A definite opinion should be given rarely in doubtful cases, unless the record of the morning and evening temperature for at least a week is available. Consequently, we refrain from absolute diagnosis because same is exceedingly precarious."

The reason for this non-committal attitude toward auscultation and percussion, on the part of the leaders of the profession, is that very often the palpable symptoms of a case and the physical signs as developed by auscultation and percussion, conflict. In other words, one-half of the evidence is in favor of, and the equally important remaining half is opposed to, a diagnosis of tuberculosis. This situation undoubtedly influenced Lindsay to write down this rule of guidance:

"Where the physical signs and the symptoms conflict . . . IT IS SAFER TO TRUST TO SYMPTOMS."

Only a competent medical man can perform percussion and auscultation, but any ordinarily intelligent human being is capable of estimating the significance or lack of significance of his symptoms.

In many cases of developing tuberculosis, the

first symptoms are those of indigestion. There is nothing about these symptoms to distinguish them from those of ordinary dyspeptics; consequently, unless they are associated with other signs of lung trouble, particularly with cough, fever, expectoration, etc., they have little diagnostic value. There will be discomfort after eating, a feeling of fullness and weight in the abdomen, belching, over-acidity of the stomach, tenderness in the pit of the stomach, heartburn and loss of appetite. Von Behring says that this loss of appetite is a pre-tuberculous indication. In some cases the appetite is not exactly lost, but it becomes fickle. At times the patient can eat nothing, and on other occasions he has a simply tremendous capacity for food. He is apt to develop notions regarding delicacies, or peculiar articles of diet, as illustrated by the young girl in a decline whose preference in the way of food is pickles. A more significant symptom than any of the foregoing is vomiting, and especially vomiting after meals. If these vomiting spells are preceded by coughing, then they become even more important still, for this is really a leading symptom of incipient tuber-

culosis. Diarrhea, of which there are two types in tuberculosis, may be added to the above dyspeptic symptoms, giving the latter an added gravity. One type of diarrhea is an irregular, soft, shattered motion, accompanied by a furred tongue, foul breath, and continuous uneasiness in the pit of the stomach. Or this complication may show itself as a painful bloody motion, accompanied by deep pain on pressure of the abdomen.

Another variety of the same type of diarrhea, due to degeneration of the intestines themselves, presents itself as a constant, dribbling, painless watery flux. In all these cases the tongue will be unnatural, either raw looking, abnormally clean, or red, or large and flabby, and showing the indentations of the teeth. The latter type of tongue is present when the bowels are ulcerated.

It is very important, indeed, to determine whether a suspicious dyspepsia is of tuberculous character or not. Lindsay writes: "A not inconsiderable proportion of such cases become tubercular." If tuberculosis is suspected as the cause of the indigestion therefore, particular and minute inquiries should be made as to whether or not

there are other symptoms of tuberculosis present, as, for instance, cough, fever, wasting, night sweats, hemorrhage.

In the more advanced cases of tuberculosis the dyspeptic symptoms increase in severity. There may develop an absolute loss of appetite, continual stomach pains, with a disgust for even the most tempting food. A growing inability to eat fatty articles of diet may develop. This is an unfortunate symptom indeed, for it is on fats and oils and similar foods that the expert physician largely depends to increase the energy and strength of his patient.

Without a doubt, part of the credit for the splendid results secured by means of the Tuberculozyne System of Treatment is due to the favorable effect it has upon the digestive organs. Dietary instructions and tonic treatment of the digestive organs form a very important part of this treatment. Therefore, if a dyspeptic, not tuberculous, but suspecting himself to be so, decides to take a course of the Tuberculozyne Treatment, the results, in any event, should justify his decision.

The nervous symptoms of tuberculosis are often entirely due to digestive disturbances caused by the disease. They may be quite numerous, but are not, as previously explained, characteristic. One of the most common affections of the tuberculous nervous person is headache. It is the same kind of dull ache in the temples, forehead or top of the head that is familiar to dyspeptics everywhere. Of course, in the more severe types of the disease, when the poisons of the bacilli are generally distributed throughout the system, the nervous symptoms are correspondingly more severe. We may then find rigor, intractable and distracting sleeplessness; an uncontrollable restlessness which will not permit the patient to rest in any position is sometimes seen; convulsions may occur; loss of memory; a persistent and exhausting hiccough, and photophobia, which is a severe pain in the eye caused by the action of light on the retina.

The effect of tuberculosis on the skin is an indefinite and unimportant sign of the disease. Owing to the debility which the tuberculosis may cause, there are cases in which the tuberculous

person develops serious skin diseases. Lupus vulgaris is a serious skin disease of tuberculous nature.

A delicate transparent skin is characteristic of the sanguine or fine grained type of consumptive. Some authorities believe that the blond, or red haired person, is more apt to contract tuberculosis than the dark-haired, coarse-skinned type. It is impossible to present any statistics on this point, the statement being based merely on observation of a limited number of tuberculous people. The complexion is also quite characteristic in some tubercular individuals. The end of the nose may be white and waxy, the color high, and especially brilliant on the side of the affected lung. The appearance of people so marked is striking, for this vivid splotch of feverish color may be, and often is, surrounded by a deathly pallor. It is worthy of note that when the foregoing signs are present, the injury to the lung is apt to be considerable.

As a general rule the onset of tuberculosis is insidious. There comes a gradual loss of vitality. The body loses nourishment. No special trouble

is discoverable, but there is an indescribable feeling of languor, lassitude and ill health. There develops, sooner or later, a trifling but nevertheless abnormal tendency to cough, and a trifling but also unnatural tendency to expectorate something—apparently phlegm—which is lodged in the back of the throat and slightly interferes with the voice so that the throat has to be cleared before speaking. The patient almost invariably overlooks these trifling symptoms, and even after an initial hemorrhage has driven him post-haste to the doctor, he will often answer the latter's inquiry as to cough and expectoration with an emphatic denial.

Unfortunately, such a case is no longer in the earliest stage, as is proved by the hemorrhage. In other words, the chances for recovery have been lessened by the previous few weeks or months of neglect. This is so vital a matter to the welfare of the tuberculous patient that it prompted Dr. Minor to write the following extract: "It cannot be too insistently noted, that every patient complaining of loss of vitality, nourishment, color, etc., which cannot be satisfactorily and clearly

accounted for, SHOULD BE REGARDED AS POSSIBLY TUBERCULOUS, and carefully examined for signs of that disease."

Pain is a symptom of tuberculosis, of frequent occurrence, but of little value as a help to diagnosis. Strange to say, a pain in the lungs, even though slight, and of no significance, will often cause more distress of mind than other far more important symptoms of the disease. A person will suddenly develop a sort of dull aching in the upper part of his chest, and it will immediately occur to him that he has contracted lung trouble. His apprehension is increased if, as often happens, the lung feels bound down and choked up. But such a pain as this may be due to intercostal rheumatism, to neuralgia, or to dyspepsia, so one must not look upon a pain in the chest as positively indicative of lung disease unless there are other important symptoms present. When the lung is painful, the distress is usually located on the side of the diseased lung. This would seem so obvious to the average person as to be unworthy of mention. The pain is not, however, invariably on the side of the affected lung: it

may, indeed, by irritation of the sympathetic nervous system, appear as a pain at the base of the neck, or even show itself at some point along the malar or jaw bone. A dull, heavy ache in the lungs may be due to a crowded condition, but a sharp pain indicates a pleuritic irritation.

As a rule, an examining physician will pay little attention to the pain, giving it merely passing notice, but in the absence of other definite symptoms presented by a person who shows a gradual loss of strength and energy, it assumes a certain importance. There are cases in which it has been practically the only specific sign of the disease. Wilkinson says: "There may be no pulmonary symptoms even in the relatively late stages of the disease. In one case there was extensive consolidation of the right lung, especially of the whole upper lobe, with no cough and no sputum."

We will assume that the above warning has been given attention. The patient presents himself at the doctor's office for treatment. We will most likely see before us a typical case, such as that described by Lindsay:

The patient is a youth. Says he is well. At first denies all symptoms, but finally admits a slight cough in the early morning. He spits and hawks and clears his throat a little, while dressing for breakfast. He is not sure that he has always had to perform this unpleasant duty, because he never really gave the matter much attention, but is inclined to think that it is a recent development. Yes, he has seen traces of blood, but always supposed it was caused by the irritation of the toothbrush. He has lost weight recently, but not anything to speak of, and is quite sure that this loss was caused by overtraining, etc. About twelve o'clock at night a hot flush comes over him occasionally, and on at least two or three occasions he has found his neck and the upper part of his back and chest damp with perspiration. A physical examination shows a rather flat chest with poor expansion. The body of the patient is only indifferently nurtured. The hands are hot and moist, and the intelligence alert—even pert, but the bodily strength and endurance is below the average for a youth of his age and build.

The above is a picture of a person we all know.

Tell him he has consumption and he will laugh in your face. But he is just the type that needs treatment.

The most constant of all symptoms of tuberculosis is the cough. The first cough noted is usually one erroneously described by the patient as a stomach cough. He insists that it is either that or of nervous origin. It is very difficult to persuade him otherwise. This is, to say the least, unfortunate. There is of course no stomach cough, but is often so called because apparently being induced by an irritated stomach.

It must not be forgotten that a morning cough is common in slight bronchitis. A more or less persistent cough is caused by smoking. When a cough is being considered as a possible symptom of tuberculosis, other characteristic signs of that disease should be looked for: otherwise it is easy to make a mistake. If it be a cough that comes on after meals, it may be and quite likely is tuberculous, for such a cough is "characteristic of pulmonary tuberculosis."

If the cough is due to a tickling sensation in the throat, and amounts to a definite effort to clear

the air passages of an apparent obstruction, it is, in all probability, a sign of debility of the larynx. Chiari says: "All tuberculous people have a pallor and poor resisting power of the upper respiratory tract and especially of the larynx. Therefore, they have a tendency to chronic and also acute recurring catarrh."

Such people would consider themselves sufferers with catarrh, but it will be observed that he says: "Tuberculous people" have such a catarrh; therefore, the catarrhal symptoms and the catarrhal cough just described may not be the cause, but the direct effect, of the debilitating action of the possibly unsuspected tuberculous lung below. A person in this condition often "ahems" before speaking, and occasionally his or her voice will break in the middle of a sentence. Lindsay thinks it wise to consider such cases as strongly suspicious of tuberculosis, but not always even if such cough has lasted for a considerable time.

The authorities are agreed that there is good reason for haste in adopting treatment when the throat shows signs of weakening, for according to statistics one-third of all consumptives develop

tuberculosis of the larynx or the vocal cords. The weakened throat tissues are, of course, infected by some of the innumerable bacilli the patient raises from the diseased lung. Sometimes a threatened throat infection can be anticipated. It will be noticed that the voice is growing hoarser, especially in bad weather. Under such circumstances, if the case can be considered tuberculous at all, treatment should be begun at once, for throat tuberculosis is a very serious affair. Early lesions are readily curable, and advanced ones not infrequently so, but a bad case, which refuses to respond to treatment, is one of the most terrible afflictions to which we are exposed. It causes a never-ending agonizing pain, destroys the rest and appetite, and quickly exhausts the vitality.

The sounds caused by the tuberculous cough are so varied as to mean little or nothing in diagnosis. Sometimes the sound is sharp, hard; again it is ringing, vibrant. In some cases it reminds us of a bark; or it may be soft, moist and low. A hollow cough usually means cavities are present, and a paroxysmal cough, that the tu-

bercle is discharging a tough, viscid secretion which the respiratory muscles find it difficult to remove from the air passages.

As a rule the tuberculous cough is worse in the morning and evening than it is during the day. At first the patient is not bothered after he gets to bed. Later on he will find occasion to arise perhaps once or twice in order to clear his throat. Early cases do not cough much during the day time, but as the disease progresses, this symptom begins to show during the waking hours, especially after meals or following some unusual excitement. Changes of temperature and drafts of cold air also cause fits of coughing. This is especially true in the cases of old people, who are consequently debarred from adopting the more radical methods of open air treatment. It is in such cases as these that the Tuberculozyne System of Treatment may be said to be a boon, for as an examination of the reports in the appendix will show, a large number of people of advanced age have used it with splendid results.

The early cough of the consumptive, like the cough of the bronchitic, often entirely disappears

in the warm weather. This produces a false sense of security, which should be guarded against, if it prompts one to drop all treatment. When once the disease has gotten a good foothold, however, and the cough is established, warm weather has less effect upon it, and this symptom usually continues.

This seems to me to be a very appropriate place in which to make certain observations regarding cough. This particular point will be dwelt upon again when we come to the chapter on treatment, but it is so important that it will bear repetition.

A tuberculous cough may be so severe as to seriously interfere with the general welfare of the patient. Such a cough better be quieted, but is largely possible by the patient's own will power. Cough is apt to become a habit with the consumptive person. He may cough eight times in ten unnecessarily. This simply irritates the throat, reduces its resistive power, encourages throat lesion, and induces the nerves to bring on the cough spasm with the slightest provocation. On the other hand, no matter how frequent a cough

PLATE VI.

Tuberculous sputum stained by Gabbett's method. Tubercle bacilli seen as red rods; all else stained blue. The bacilli are magnified about 3,000 times.

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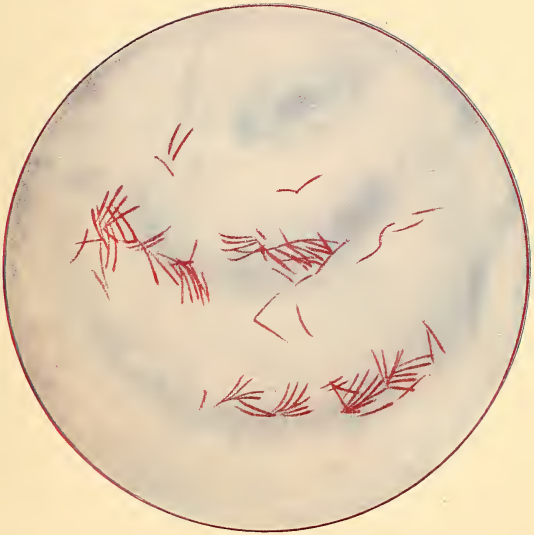

may be, if it is easy and useful (raises sputum), it should not be interfered with.

A thorough system of home treatment will include suggestions as to the management of the cough, which is of great value to every sufferer with lung trouble. The Tuberculozyne Treatment, as shown by the reports of patients in the appendix, has a most favorable effect upon this very distressing symptom, and it produces this effect not through any habit forming drugs or narcotics, which are never used. The quick improvement in the cough symptoms mentioned by patients is attributed entirely to the healing power of the treatment itself.

The foregoing remarks should be given particular attention, especially by readers who through misinformation may have gotten the idea that cough causes consumption. This idea has been fostered and improved upon by some people with cough medicines to sell, but if you have read these pages with only average care, you by this time know that there positively cannot be a cough unless there is inflammatory or other disease of the respiratory organs.

Furthermore, the patient should abandon the idea that because his cough has stopped, his lung trouble is necessarily on the mend. Sometimes to stop a cough, especially one which is raising sputum, is most harmful, for cough is Nature's method of getting rid of the poisonous secretion that has gathered in the air passages. The cure of consumption, when accomplished, comes about through the healing of the ulcerated tissue, and not by keeping the sputum in the body, where it can have no effect except an injurious one. To stop a cough by means of cough medicines, especially in a patient in whom other symptoms of consumption are not prominent, gives him a false sense of security, during the continuance of which, in the absence of a real constitution-building treatment, the disease may make such inroads as to seriously jeopardize his chances of recovery.

Sputum, or as it is commonly called, the phlegm, coughed up and discharged by a person with lung trouble, has great weight in determining whether the latter is of a tuberculous character or not. Sometimes there is no expectoration

(spitting) in the early stages of the disease, but this is a comparatively rare occurrence. Eighty-three out of every one hundred patients in the first stages of tuberculosis expectorate more or less. In some the quantity is almost nothing, being simply a trifling amount of whitish, glairy mucus. The amount of sputum being produced is also obscured by the common custom of swallowing. Women are particular offenders in this respect, owing to their unwillingness to expectorate. Some patients refuse to spit. This practice is a very dangerous one, and there is no doubt when it is discontinued, the prospects of that particular patient immediately improve.

Tuberculosis is a self-inoculable disease, that is to say, a tuberculous person can infect another part of his body with bacilli from his lungs. Consequently, to swallow the sputum, which may contain large quantities of bacilli, is to run serious danger of causing tuberculosis in some part of the digestive organs. This is why, in many cases, we have stomach trouble associated with lung tuberculosis. The swallowed bacilli are often the direct cause of the diarrhoea, which in

many cases, by causing debility of the system, very materially, discounts the patient's chances of recovery.

Bacilli may also pass from the intestines into the general circulation, and eventually reach the brain, causing meningitis, a swiftly fatal form of tuberculosis.

At first the sputum of tuberculosis is a sticky, shiny, stringy mass, which may contain certain dark points. This color may be due to carbon previously inhaled in the form of smoke, but it may also be caused by particles of degenerated lung tissue.

In early cases the sputum may contain also little rounded pellets, which look like boiled sago. As the disease progresses the sputum grows thicker, becomes more yellow, and while it may float in water, sends down long streamers from its under surface. Later on, when the sputum has become still more abundant and of a disagreeable greenish-yellow color, it sinks heavily in water, and collects on the bottom of the vessel used, in the form of a disgusting foul-smelling deposit. If examined closely, roundish coin-like

bodies may be detected in this deposit, indicating positively, even in the absence of all other tuberculous symptoms, that the lung is seriously diseased. These coin-like bodies are considered by all the authorities as very good evidence of the existence of a lung cavity.

At first tuberculous sputum has no odor, but it gradually develops a slightly sickly smell, and later on in the development of the disease may become extremely offensive. In the earlier stages, also, the quantity of the sputum expelled is very slight, as already noted. It gradually increases in amount, however, as the disease progresses, and some advanced cases will expectorate one or more pints of pus and phlegm during the twenty-four hours.

The ordinary person would suppose that the large amount and increased offensiveness of the sputum must necessarily mean that the case is progressing unfavorably. For this reason, as in the similar case of cough, many lung sufferers suppose that if they stop the raising of the pus by means of medicines, they are thereby improving their condition. It does not follow, however,

because the sputum is considerable and possibly increasing, that the case is not making favorable progress. There are many instances on record in which considerable expectoration was present almost up to the time of recovery. On the other hand, cases that raise little or no sputum may make poor progress, because of the unrelieved congestion of the affected portion of the lung.

There are cases of tuberculosis in which an abundant sputum is practically the only symptom observable. Lindsay says: "Numerous cases have occurred in my practice in which tubercle bacilli were detected, although no definite signs could be made out, and the symptoms were merely suspicious."

A man in this condition would naturally and wisely be anxious to have his sputum examined, but as I have already explained, examinations of sputum do not always demonstrate the bacilli.

As I said before, the physician should always be willing to make examinations of sputum, and should always render an account of the result strictly in accordance with the facts. But it has happened, and it always will happen, that unless

a large number of such examinations of the same individual's sputum are made, all such examinations resulting in a definite negative, an unfortunate mistake can be made, unless the examination also demonstrates the presence of albumin. Under such circumstances it is best to take a short course of treatment. The sputum may not be tuberculous. Possibly a bronchial condition is indicated, or the after-effects of an attack of influenza are making themselves felt. Be that as it may, there is evidently something radically wrong with the air passages, or this unaccountable and unusual amount of sputum would not be present. It is unnatural, it is suspicious, and should be relieved.

While an increase in the expectoration is not necessarily a bad sign, a decrease may usually be looked upon as a favorable one. As the disease gradually comes under the control of the treatment the sputum becomes less disagreeable in odor, and of a paler color. Gradually it becomes whitish and glairy again, presenting about the same characteristics that it did when it first made its appearance.

There are similar paradoxes with regard to the temperature. Fever is a very important indication of the presence of tuberculosis, but its severity or its mildness do not necessarily mean that the attack is correspondingly grave or otherwise. In some people the fever would be higher than in others, because of their difference in nervous organization. In people of a lymphatic temperament the fever may be very mild, or absent altogether, because they are so constituted as not to react strongly. The fever of tuberculosis is caused, not so much by the lung ulcer, but by the poisons of the bacilli circulating in the blood. Therefore, when we have much fever, we may conclude that the bacilli in the lung, whether few or many, are causing active poisons, which are throwing the system, as a whole, into a febrile condition.

Too much emphasis must not be placed on the presence or absence of fever, however. The damage to the lung may have become considerable before any temperature is observed. If we have a rise in the temperature of a patient, especially in the afternoon, in connection with other symp-

toms of the ailment, it becomes easier to arrive at a decision in doubtful cases, but the absence of temperature does not discount these other symptoms, if the latter are prominent enough to be worthy of note. "In a doubtful case," says Lindsay, "the presence of an afternoon temperature is of great value, but its absence has little weight."

Such an absence of temperature may indicate, not that tuberculosis is absent, but that the vitality of the patient is so great that his body force is successfully combating the debilitating toxins in his blood. Such a patient, with a vigorous constitution on his side, stands every chance of recovery, if proper treatment is adopted without delay.

The common but not invariable accompaniment of fever are night sweats. These vary in severity, from a slight moisture or dampness about the neck and upper part of the chest and back, to a severe perspiration which may be profuse enough to wet the bedclothes through and through, not once, but several times in a single night. In cases where night sweats have

not yet put in an appearance, the increasing debility of the system is indicated by a clammy condition of the skin: the palms of the hands and the soles of the feet are especially likely to exhibit this symptom. Unless a number of other symptoms of tuberculosis are present, however, too much emphasis must not be placed upon sweating. Both day and night sweats are characteristic of some forms of debility, especially that due to long continued overwork, worry, etc.

When sweating becomes pronounced, muscular weakness is usually correspondingly severe. Sleep does the patient little good. He arises in the morning, after a restless night, unrefreshed and very tired.

Such a case will also show, in all probability, considerable emaciation or loss of flesh. This is one of the most constant symptoms of tuberculosis, and one of the most reliable. "Wasting, attended by fever," writes Lindsay, "when not accounted for by some obvious condition . . . suggests the possibility of tuberculosis of the lungs.

"If to these symptoms cough can be added, suspi-

cion becomes strong, and if to wasting fever, cough, we can add hemoptysis (hemorrhage), the suspicion becomes A PRACTICAL CERTAINTY."

Loss of flesh is due to the fact that the waste of the tissues is greater than the digestive organs can repair. It is always a more serious symptom in cases where lung troubles are complicated by digestive disorders. These people either eat too little, or what they eat is not turned into nutritious body-building material. Therefore, the vital strength of the system is being systematically reduced every day, and this in conjunction with the debilitating action of the disease itself makes the chances of the patient for recovery much less hopeful. The offset for emaciation, or loss of flesh, is liberal feeding, with wholesome and acceptable foods. The digestive organs must be made strong enough to absorb every ounce of nutriment there is in generous and nourishing meals. If the effort to restore the digestive organs to health be successful, the patient begins to take on flesh, and may regain his lost weight quite rapidly. There is no one sign in the treatment of tuberculosis more favorable than this gain

in weight, if what is gained be, not fat, but healthy flesh.

Alcoholic beverages are sometimes recommended to consumptives as desirable, but it is my opinion that great moderation should be used in all such drinks. A little alcohol, in the form of good red wine, is sometimes advisedly prescribed, but those who use it to excess will injure themselves in more ways than one, and those who persuade a consumptive to drink liquor are giving bad advice.

Excess in the use of alcoholic stimulants often has a tendency to develop a fat or bloated condition. It is not desirable to make a consumptive person fat, unless at the same time healthy flesh is forming, and the constitutional condition is all that could be desired. Under any other circumstances, the increased fat would simply be another burden on the declining strength.

Sometimes the loss of flesh, while continuous, is very gradual. It is possible under such circumstances that a patient will neglect taking any form of treatment until after the loss of weight has become striking. The first sign of haggardness of feature, or protruding of bones, usually causes

alarm. The average patient will then discover several other, hitherto, unnoticed symptoms of lung trouble; and there are some people who will invent a few. This symptom of loss of flesh is one of the most reliable of all signs of tuberculosis, but it is surely foolish for a person to jump to the conclusion that he must have consumption because he is getting thin.

Emaciation, a severe loss of flesh, means that the case is a severe one. To wait until one is approaching the skin and bone stage, therefore, is folly. This is addressed particularly to those who all their lives have been poor eaters and indifferent weight gainers. Such patients add to the difficulties and anxieties of their physician, for it is absolutely essential that they shall overcome this lack of appetite and desire for food at once, and radically. To make his patient eat and also to digest and profit by what he eats, is in such cases the physician's paramount duty.

If a treatment succeeds in changing one of these nibblers into a good, hearty eater, the chances of the patient for recovery are greatly increased, for the change itself is evidence that

the vital strength and constitutional power of the patient increase correspondingly. There is even a likelihood that after the disease is overcome the patient will be, to all intents and purposes, stronger, healthier and heartier than he was before he became infected. The result in such a case as this would mean that the tuberculosis was a blessing in disguise.

It is very important that the patient should have his appetite increased whether he be losing flesh or not, for a good appetite makes it easier for him to keep dietary rules. It makes him like foods, possibly previously distasteful to him, which because of their powerful, strength-giving qualities should be, and must be, on every consumptive's bill of fare.

Tuberculosis exercises a disturbing influence over the heart. This is an early symptom, and for that reason, particularly important. Some authorities contend that heart irregularity is one of the most significant of all the pre-tubercular signs. If it develop in a person who has hitherto had little or no heart trouble, it must be considered as suspicious.

Just as an increase of weight is a good sign of a change for the better, so improvement in the heart action is an excellent indication of the effectiveness of the treatment used, and as a general thing, these two betterments will be noticed at about the same time. With the increase of weight, due to the action of the Tuberculozyne System of Treatment, there usually develops an improvement in his pulse rate, as the heart action resumes the normal.

A person who has suffered more or less with heart irregularity, and who later finds himself afflicted with an obstinate respiratory disorder, should without delay consult a competent physician, and submit himself, if so advised, to a thorough system of treatment, for statistics indicate that lung trouble generally, and tuberculosis in particular, run a stubborn course, when accompanied by this complication. Among the inhabitants of Leipsic, Messenberg found that eight out of every ten cases of heart disease were also tuberculous.

When the tubercularization is considerable the pulse rate, which in normally healthy individuals

is from 60 to 70 beats per minute, may increase to as many as 100, and in rare instances to as many as 120 or even 130. As a rule the more advanced the disease the higher the pulse rate, the usual range being between 70 to 100.

Although there may be little danger of heart failure, any irregularity of the heart action is apt to alarm the patient, and, as I have elsewhere stated, success in the treatment of tuberculosis demands that the sufferer shall be calm and easy in mind and untouched by fear and worry.

The patient should be made to understand that if he is subject to a disquieting palpitation of the heart on the slightest exertion, or after meals, this irregularity is a symptom which should give him no particular alarm.

Minor effects of heart complication in tuberculosis sometimes appear, such as watering of the eyes, a dropsical swelling usually seen under the eyes or about the ankles, and possibly a change in the color of the skin, which becomes of a waxy paleness or takes on a bluish, purplish appearance.

Dyspnea, or breathlessness, is one of the most im-

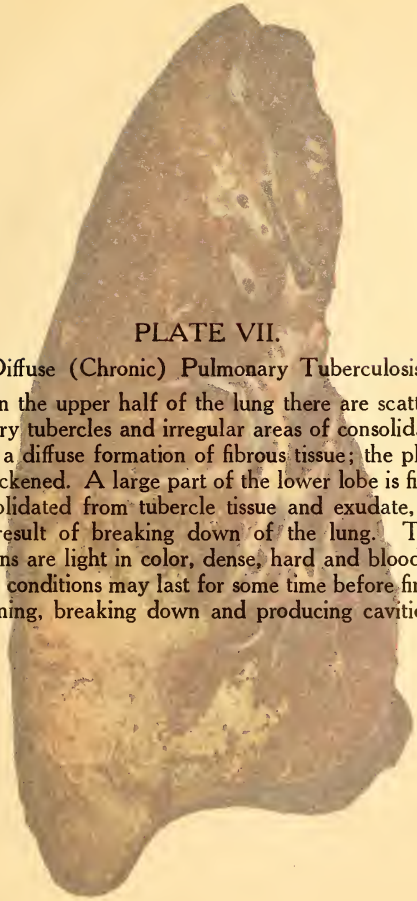

PLATE VII.

Diffuse (Chronic) Pulmonary Tuberculosis.

In the upper half of the lung there are scattered miliary tubercles and irregular areas of consolidation with a diffuse formation of fibrous tissue; the pleura is thickened. A large part of the lower lobe is firmly consolidated from tubercle tissue and exudate, and the result of breaking down of the lung. These regions are light in color, dense, hard and bloodless. Such conditions may last for some time before finally softening, breaking down and producing cavities.

is from 60 to 70 beats per minute, may increase to as many as 100, and in rare instances to as many as 120 or even 130. As a rule the more advanced the disease the higher the pulse rate, the usual range being between 90 to 100.

Although there may be little danger of heart failure, any irregularity of the heart action is apt to alarm the patient, and, as I have elsewhere [illegible] culosis [illegible] d easy [illegible] the patient should be made to understand that while he is subject to a disquieting palpitation of the heart on the slightest exertion or after meals, this irregularity is a symptom which should give him no particular alarm.

[illegible] tubercu-losis sometimes appear, such as watering of the eyes, a dropsical swelling usually seen under the eyes or about the ankles, and possibly a change in the color of the skin, which becomes of a waxy paleness or takes on a bluish, purplish appearance.

Dyspnea, or breathlessness, is one of the most im-

portant symptoms of tuberculosis. Strictly speaking, dyspnea is more than breathlessness, although shortness of breath is the most common and distressing variety of dyspnea. Dyspnea, also, comprehends changes in the manner of breathing, changes in the depth of inspiration, and changes in the sound made by both the drawing in and forcing out of the breath.

In the absence of other distinctive symptoms of tuberculosis, dyspnea would be misleading, for it is seen also in heart disease, intercostal rheumatism, chlorosis, cancer, obesity, dyspepsia and brain trouble. A patient and his friends begin to realize that the former's breathing is becoming noisy, whereas breathing should be an absolutely noiseless function. One man, for instance, will snuffle when he draws in a breath; another will make a singing, sighing or whistling sound; a third appears to be obliged to exert some little effort to fill his lungs. This is the asthmatical form of dyspnea.

These difficulties are never present in a perfectly healthy individual, and point unequivocally to some unnatural condition of the air passages.

When present they should be given attention with the idea of determining their exact cause.

Dyspnea is a more or less pronounced symptom of all forms of lung trouble, and is as frequent in bronchitis as in consumption. There is neither sense nor safety in neglecting lung trouble, even if it is not tuberculous. If that fact can not be definitely determined, dyspnea, from whatever cause arising, should, nevertheless, be given due consideration. If the dyspnea be growing worse from day to day, if the patient find himself growing progressively less able to indulge in even the mildest sort of exertion, there is reason enough for seeking medical advice. We all know that middle-aged people of a sedentary mode of life, and fat people also, are apt to have difficulty with their breathing, not because they are tuberculous or have heart disease, but simply because they have allowed the passages to close up more or less through disuse. Such a condition is harmless and common enough. It must not be confounded with the dyspnea of true lung disease. It takes only the most limited powers of observation, however, to distinguish

the difference between the labored breathing of a healthy fat man, and the corresponding distress of a tuberculous, or bronchitic patient.

One of the oddest symptoms of disease in the lung is an expansion of the nostril with each inspiration made by the afflicted person. This sign should be sought in connection with a waxy nose, pallor and purple finger-tips. Add to these symptoms of lung trouble other signs, such as deformities of the chest, cough, wasting, expectoration, fever, etc., and a fairly complete and reliable picture of tuberculosis will have been drawn. If the patient breathes with evident difficulty, and the complexion is unnatural, and the nostrils work in and out with every breath taken, says Lindsay, the combination should suggest tuberculosis, even in the absence of emaciation.

One peculiar effect of lung obstruction is that it causes the patient, when resting, to lie on the side of the unobstructed lung. When he does so the secretion in the air passages is drawn off by gravitation, and this eases the breathing. In many cases it would be safe to decide if a person lies on one side or the other, because it enables

him to breathe more easily, that the lung on the other side is obstructed. The mean preference of lying on right and left side when accompanied by no distress, if position is reversed, is of course natural and common and of no diagnostic value. Only when natural relief is experienced when resting on one side and distress occurs when lying on the opposite, is this symptom of importance.

When respiration is notably altered, much quickened and quite shallow; when the movement of the chest is altered from normal, and the up and down motion of the diaphragm is noticeably changed, the case is one of considerable severity. If possible, these conditions must be improved without needless delay, for the blood is not being properly aerated. It is of little avail to bring the digestive organs to a state of efficiency, and then permit dyspnea to nullify their work by preventing the aeration and purification of the blood.

The foregoing illustrates the fact which I think has gradually become apparent, and which I wish to emphasize now particularly: the treatment of tuberculosis is no simple matter. Not *one* pre-

caution, but *every* precaution must be taken before such treatment is worthy of the titles, modern and scientific. The treatment should be able to arouse, marshal and direct the forces of nature so that an overwhelming vital resistance to the further progress of the disease is organized.

Such a comprehensive gathering together of the forces which assist nature has been aimed at in the development of the Tuberculozyne System of Treatment, during the several years devoted to its perfection, realizing the great truth that, if the full powers of the human body are organized and inspired to act, disease must yield if too great destruction has not already taken place in the vital organs.

Nine times out of ten hemorrhage is a faithful sign of tuberculosis. Dr. Minor attributes the majority of hemorrhages to tuberculosis. Strickler, in examining many cases among German soldiers, found eighty-six out of every hundred were infected with tuberculosis, although none of these men suspected it previous to the advent of the hemorrhage. Another investigation showed two hundred and eighty-two out of three hundred

and seventy-nine cases of hemorrhage were tubercular. This would indicate that in eight hemorrhages out of every ten, diagnosis of consumption would be correct: yet hemorrhage may be and in rare instances is, induced by other causes than tuberculosis, such as severe internal injury.

A very large number of tuberculous patients are first made aware of their condition by a more or less copious hemorrhage. Previous to its appearance, such persons are usually, for a longer or shorter period, in a run-down condition. They lack energy and snap, tire easily, are nervous, and not refreshed by sleep. In most cases a little cough and some expectoration precedes the hemorrhage. Ofttimes these two symptoms are so trifling and commonplace that they are overlooked. Many such cases, also, have a history of recurrent or continuous colds for months, or even years previous to the day of the hemorrhage. A little sweating and some fever may antedate the hemorrhage by a few weeks, but they are seldom given any particular attention, being confounded with the general feeling of ill health of which the sufferer is complaining.

Then, on a day, or in the night, there comes a warm, sweet, sick feeling in the chest, and up comes a mouthful of bright blood. Careful inquiry will usually discover an immediate cause for the hemorrhage, such as a blow, excitement, exercise, a severe fit of coughing, damp weather, a hot spell, a hearty laugh, a sudden movement, and, in women, the pre-menstrual period.

The immediate effect of the first hemorrhage on the mind of the patient is apt to cause a feeling of despondency. He has a feeling in his heart that all is over, hope is dead, effort is a mockery. Strange to say, however, after this despondency has passed away, which it soon does, the patient is never affected with it again, no matter how many hemorrhages he may have. He soon learns that they are not dangerous, that the amount of blood lost is insignificant, and the symptom itself has little bearing on the severity, or otherwise, of the disease. There may be quite copious hemorrhage with only very slight tuberculari zation of the lungs; and, vice versa, a trifling loss of blood, or even no hemorrhage at all, notwithstanding large areas of the lung may be destroyed.

Loss of blood seldom exceeds two ounces. It usually appears more, owing to the exaggerating effect of fear, or because it is expectorated into a vessel containing water. There are cases on record of immense losses of blood. The raising of ninety-four ounces in twenty-four hours is the record. Smernow reports a loss of ninety-seven ounces in three days—with recovery! These instances are abnormal, but the common severe hemorrhage, though frightful in appearance, seldom seriously affects the general condition of the patient. In fact, and I take great pleasure in making it known, many patients date the beginning of their recovery from the day of the first hemorrhage, which often relieves the congested condition of the affected portion of the lung.

Strange to relate, it is not, as might be supposed, the thin, weak, and debilitated patient who is most liable to hemorrhage, but the ruddy, well-nourished individual, who delights in outdoor exercises. This seems like a mystery, but is simply due to the fact that the vigorous individual puts a greater strain on his veins and arteries by

his exertions. Spring is the favorite season for, and twenty to thirty the most likely age at which, this symptom will put in an appearance. These two circumstances are explained, as was the hemorrhage of the vigorous patient, in a very simple way: spring is a period of activity, and between twenty and thirty are embraced the most active years of life.

As a sign of disease in the lungs, hemorrhage is so important that it is very desirable to determine positively that the blood comes from those organs, and not from some other part of the body. Occasionally there is a blood vomit from the stomach of a person suffering with lung trouble. There are striking differences between hemorrhages and a blood vomit. In the latter the amount of blood will be considerable, dark, even almost black, accompanied by stomach pains, and probably preceded by the vomiting of particles of food. A blood vomit ends almost as abruptly as it begins.

In lung hemorrhage, the blood is not vomited, but coughed up. It is not black, but frothy, mixed with air, so that it has a bubbly appear-

ance, and bright red. The discharge of blood does not end suddenly, but is usually followed by more or less spitting of blood for several hours or days afterwards.

Nature has its own effective ways of stopping the flow of blood, and will not fail to put them into immediate effect when the hemorrhage is of a minor character, if the patient lie down and rest and abstain from food for a few hours.

Different modes of onset are observed in tuberculosis. We have already described the insidious and catarrhal types. These with the hemorrhagic cases are the three types most constantly observed. It is a little difficult to believe, because of its spectacular character, that of the three types, the hemorrhagic is the more favorable as regards recovery. If, in a case of this kind, the appetite can be increased, the nerves quieted, and the body kept in a vigorous state of preservation, the prognosis is good, provided the patient through his entire treatment will faithfully follow instructions, and has will power not to become careless or negligent, because he is making rapid and decided progress toward re-

covery. Improvement from almost the very beginning of treatment may cause the patient to become too sanguine, and result in his failure to continue a sufficient length of time to ensure entire and complete eradication of the disease.

Time and patient observance of instruction given by the physician is necessary in all cases for complete recovery.

Owing to the fact that the patient can infect himself in other parts of his body with bacilli from the lungs, it sometimes happens that the lung trouble is complicated with outbreaks of the disease elsewhere in the body. The case then becomes a much more serious one. This extension of bacilli is an accident liable to happen to any consumptive, however mild the case may be.

While there is a colony of bacilli in the body, there is no guaranty that general tuberculosis will not develop at any time. They may enter the circulation through swallowing of sputum, by penetrating a blood vessel, or by being taken into the lymphatic glands through the action of the lymph. As soon as they enter the circulation, they are attacked by the white blood corpuscles,

and carried by these vigilant little soldiers of the system into the remotest branches of the arteries and the blunt ends of the veins. Here, with surroundings just to their liking, they will proceed to increase in number, unless the leucocytes succeed in destroying them.

A favorite lodging-place of such escaped bacilli are the joints. Tuberculosis of the joints, first observed as a very slow, deliberate, almost painless, impairment of motion, results. The joints swell, gradually increase in size, and may become useless in time.

As a rule, an abscess caused by the germs breaks down sooner or later, and the released pus burrows its way to the surface, causing a very ugly and stubborn ulcer. The bones of the hip joint and knees are the favorite locations for this manifestation of the disease, the former causing, when it begins in childhood, the familiar deformity known as hip-joint disease.

As the tubercle bacillus, once it escapes into the circulation, may infect almost any organ of the body, such as the liver, kidney, special organs, intestines or brain, such an accident should be

prevented if possible, for every new focus of the disease largely increases its severity. Once the bacilli reach tissue outside the lung, the body can no longer bring into play that splendid device of nature for getting rid of the germs, viz., the cough.

The system has no means of mechanically ridding itself of the bacilli, when they are located in the liver, the kidneys, or the glands. Therefore, the treatment adopted must be powerfully searching and anti-tuberculous, if any progress is to be made toward recovery. A general systematic course of treatment, preferably one that has the power to make the blood more antagonistic to the vitality and further increase of the germs, is, therefore, of supreme importance.

That the Tuberculozyne System of Treatment has far-reaching and subtle effect is indicated by the results obtained in cases of generalized tuberculous disease. A marked improvement in diseased joints and tubercular glands has been noted after the treatment had been taken but a few weeks.

When it is remembered that tubercular affected

joints have generally been considered hopeless by even the most enthusiastic believers in the curability of lung tuberculosis, we think this must be considered a truly remarkable achievement for the Tuberculozyne System of Treatment.

Reference may be had to the appendix accompanying this book for records of cases of the various forms of tuberculosis treated successfully by the Tuberculozyne System of Treatment.

Consumption has a larger number of women victims than men, probably owing to the greater instability of their nervous systems and the unhygienic mode of living, confined in close houses, as followed by the majority of the sex. Women also take less open air exercise than men. Women, furthermore, are exposed to drains upon their vitality such as that caused by excessive childbearing and long-continued nursing, that the other sex escape. These two latter are prolific, predisposing causes of tuberculosis, for they drain the system of its resistive power. As a compensation for their greater liability to the disease, tuberculosis usually runs a milder course in women than in men, and it is probably due to

this fact that the mortality of the sexes is about equal.

The most striking effect of tuberculosis in women is its interference with the menses. It may cause a missing of the period for months before specific signs of the disease develop. Delayed menses, therefore, in a female whose health seems to be on the decline, is a diagnostic sign of the utmost importance, for if correctly interpreted it may lead to the adoption of anti-tuberculous treatment at just that early stage of the disease when it is most rapidly and easily cured.

In many cases, after the tuberculosis has gained a good foothold, the menses stop entirely, and no efforts, which, by the way, are uncalled for, will bring them back until the disease is arrested. Return of the menses naturally, while treatment for tuberculosis is being taken, is a splendid sign, for it means that the strength of the system has been sufficiently restored to enable it to support this additional drain upon its resources.

There is a popular belief that the stoppage of the menses is a very bad sign, and that the subsequent decline of the (usually young) woman is

due to this stoppage, while the fact of the matter is, the exact opposite of this is true. Nature, recognizing it has a stubborn enemy to combat, automatically stops the menstrual flow in order to economize the vitality of the system. In other words, it stops this periodical drain upon the organism because the strictest economy of the strength is now in order, if the individual is to be preserved.

This fact needs to be kept in mind by all women: this function will only be restored when the strength of the blood has been so far regained that the flow can be safely resumed.

Hemorrhage is more likely to occur in women during this period than at any other, and the menstrual flow has the effect also of increasing fever. Tuberculous fever often appears a day or two previous to the menses, and continues two or three days after it has begun. Small wonder, therefore, that nature quickly decides to relieve herself, for the time being, of this unessential and burdensome drain.

Although so important a leading symptom of tuberculosis in women, stoppage of the menses

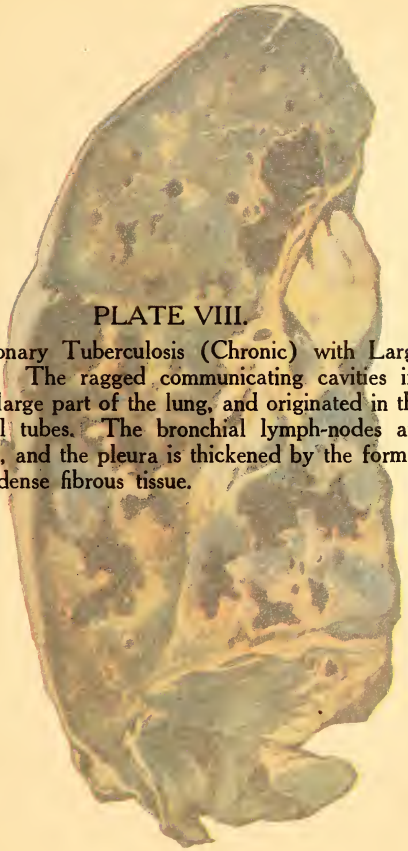

PLATE VIII.

Pulmonary Tuberculosis (Chronic) with Large Cavities. The ragged communicating cavities involve a large part of the lung, and originated in the bronchial tubes. The bronchial lymph-nodes are enlarged, and the pleura is thickened by the formation of dense fibrous tissue.

due to this stoppage, while the fact of the matter is, the exact opposite of this is true. Nature, recognizing it has a stubborn enemy to combat, automatically stops the menstrual flow in order to economize the vitality of the system. In other words, it stops this periodical drain upon the organism because the strictest economy of the strength is now in order, if the individual is to be preserved.

PLATE VIII.

Pulmonary Tuberculosis (Chronic) with Large Cavities. The ragged communicating cavities involve a large part of the lung, and originated in the bronchial tubes. The bronchial lymph-nodes are enlarged, and the pleura is thickened by the formation of dense fibrous tissue.

Hemorrhage is more likely to occur during this period than at any other, and the menstrual flow has the effect also of increasing fever. Tuberculous fever often appears a day or two previous to the menses, and continues two or three days after it has begun. Small wonder, therefore, that nature quickly decides to relieve herself, for the time being, of this unessential and burdensome drain.

Although so important a leading symptom of tuberculosis in women, stoppage of the menses

is not a positive sign of the presence of the disease, and in the absence of other suspicious symptoms cannot be considered as having much diagnostic importance. Girls fall into decline from other causes besides tuberculosis, as, for instance, chlorosis and anemia. It is a mooted point, however, just what relationship these two diseases have to tuberculosis. We should, therefore, consider this symptom carefully in relation to accompanying symptoms that are common in, and characteristic of tuberculosis, realizing that it increases in importance as a diagnostic sign in exactly the same ratio as other symptoms of the disease present gain in plausibility.

The progress of a case of pulmonary tuberculosis toward recovery may be quite steady and deliberate, if the case is placed in proper hands early enough. It is a very deceptive ailment, however. Bad cases often do well, while apparently hopeful cases make slow progress.

There is no doubt in my mind that this apparent variability in the character of the disease is sometimes the result of the degree of fidelity with which patients live up to their instructions. There are

individuals who, no matter what the cost, will please themselves, and if the commands of their doctor interfere with their desires, so much the worse for the commands.

Many a hopeful case has been set back weeks, or even months, by one evening's self-indulgence. The inclination of such a patient may be aided and abetted by the very progress made up to that time toward recovery. He feels so strong and well that he considers he can safely allow himself a little latitude. Therefore, a treatment that can act quickly is doubly to be desired, for it shortens the period of self-denial and thereby increases the chances for recovery of those adventurous individuals who love to speculate, even though the stake is life itself.

People of sanguine, enthusiastic temperament, people with reddish or blond hair and delicately organized constitutions, with high-strung nerves, unduly sensitive, and often intellectually brilliant, are not only the most frequent victims of tuberculosis, but also make the poorest patients. This is because they are difficult to control, having strong impulses of their own. They are free souls,

chafing at all kinds of restraint even though, paradoxical as it may sound, restraint is the price of freedom. With such people it is no use to argue. Simply say to them that there is only one alternative: either submit to a little discipline for a while, perhaps not as long as you think, or else venture the consequences.

The rewards promised this nervous, irritable type of patient are the joys of a glorious appetite, sound and refreshing slumber coming unbidden at the hour desired, a greater capacity for exertion, and a better presence, due to an increase in the potential energy of the organism. These are very solid blessings, indeed, and if regained and maintained, are ample compensation for any minor restrictions of treatment, which, because they break in on the ordinary routine of life, may be found irritating. A speedily acting treatment also makes it possible for even severe cases to quickly rehabilitate themselves to such an extent that practically a normal mode of life can be resumed without prejudice to the further successful prosecution of the treatment.

The most favorable results are obtained in the

wiry, sometimes thin, but always energetic type of patient. These people seldom find their energy much impaired by the disease, and it is usually a very easy matter to bring their appetites and their digestive powers to a high state of efficiency. Their hearts seldom give any trouble, —a splendid sign,—there is little or no fever, and their lungs show early a strong tendency toward fibrosis, or the imprisonment of the germs in a tough, fibroid sac.

In tuberculosis mental strain, worry, anxiety and despondency act to retard the progress of the case toward recovery. At the International Tuberculosis Congress held in Washington recently, (which Congress was attended by the author), Professors Charrin and Roger gave the results of their investigations on this point. They declared that long-continued physical or mental strain, with anxiety due to responsibility, overwork, and useless worry, were most potent predisposing causes of tuberculosis. They proved that excessive exertion, especially that of an unproductive and monotonous character, had a powerfully predisposing influence toward tuberculosis.

No system of treatment in tuberculosis can exercise its greatest power for good unless the mental attitude of the patient is also favorable to a steady progress toward recovery. If the patient indulge in needless worry, gives himself up to seasons of despair, if he show a tendency to the "what's the use" attitude of mind, he is not only discounting the treatment, but also aggravating his disease.

The peculiar mental attitude of the pre-tuberculous and the tuberculous patient has been subjected to careful scrutiny. It has been found that in its earlier stages the disease may affect the mental and spiritual man. The good-natured individual becomes captious, peevish, finicky. His temper suffers, and though he may not wish to hurt the feelings of his loved ones, he nevertheless does not spare them the sting of his pessimistic humor.

We may also observe, in some instances, a sort of weakening of the character. The formerly ambitious and persevering man, the man who loved order and system, becomes slovenly and slipshod. There are instances where a man

previously scrupulously exact and just in his financial, business and social relations with other people, becomes lax, indifferent, and even blameworthy; not because he has any real desire to shirk his obligations, but because his physical condition seems to have destroyed and nearly shattered his former faithful and generous mental character.

The effect of wholesome treatment in such cases is very striking: often hope is renewed, the fear of immediate death is removed, and life again seems desirable. From that time onward the patient develops a faith in his ultimate recovery. Under such conditions the result is almost sure to be a favorable termination of the case.

Some scientists hold that tuberculosis strikes down only the unfit and degenerate. Human experience refutes this view. Does it not seem that the disease prefers as a victim the talented, the fine and the lovable? There is an old heathen proverb: "Whom the gods love die young," and observation would seem to indicate that these, not only the loved of gods, but also of men, are as

frequently, if not more frequently, stricken down by this almost universal plague, than are those who can be more easily spared.

Personality is of much importance. It may determine the future prospects of the patient. If he have courage and a light heart, if he can snap his fingers in his enemy's face, there is more than one good reason why he should recover. A strong will to live, not merely a weak wishing, but a firm, calm determination to live, will carry a man past almost any pathological disaster. Every physician knows this is true, and having the welfare of his patient at heart, always tries to arouse this Spartan spirit.

Practically every reader of this book knows that mind has a wonderful mastery over matter, especially when that matter is body tissue. We all know of cases where only the indomitable courage of the sick person kept the spark of life burning in his body, until the crisis was past and he came triumphantly back from the very shadow of the cypress.

Any and all forms of lung disturbance, whether known to be tuberculous or not, should be rec-

tified at once, for the most fortunate thing that can happen to the consumptive is that his disease shall be recognized and properly treated in its earliest manifestations.

Authority for the foregoing statement appears in every work on tuberculosis issued in the last ten years. It is also the theme of the professors in all the colleges. It is insisted upon in the daily bulletins of municipal health departments. One of the latter recently issued a bulletin addressed to the physicians in New York City. Among other things this circular contained the following statement:

"Incipient (early) tuberculosis tends toward recovery." In all coughs which last more than a few weeks (unless otherwise explainable), tuberculosis is to be suspected. SUCCESSFUL TREATMENT DEMANDS EARLIEST POSSIBLE DIAGNOSIS.

It was with this latter thought in mind and also that all might be said possible to emphasize the necessity for early treatment in lung ailments, that I went into such minute detail as to symptoms in the foregoing pages.

Assuming that this has served its purpose and

that the person who has reason to be concerned regarding the conditions of his lungs is properly aroused, the next following and important question is that of treatment.

NOTE

The appendix mentioned in this book is printed in separate form, and should be preserved for purposes of reference.

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PART III

METHOD OF TREATMENT

SANATORIUM TREATMENT

SANATORIUM AND HOME TREATMENT COMPARED

DETAILED DESCRIPTION OF MODERN HYGIENIC TREATMENT

Those who adopt the Tuberculozyne System of Home Treatment are thoroughly advised as to mode of life, diet, bathing, rest, management of symptoms and general measures of that character. They are shown how to secure the benefits of life in the open air, given instructions how to adapt the home surroundings in accordance with the best modern ideas of sanitation. In addition, they are provided, without extra charge, with all such medicines as may, in the judgment of the physician in charge of the case, be necessary to counteract unfavorable developments, and also given a thorough course of medical treatment.

Combined with Tuberculozyne medical treatment, the hygienic measures included in the Tuberculozyne System of Treatment gain, I believe, immensely in effectiveness.

That these hygienic measures are very comprehensive, modern and up to date can be gathered from the following: The patient is given the benefit of every hygienic method for aerating the blood, and keeping the lungs flooded with pure air. He is instructed how, when, and of what his meals should be composed. It fully

covers the questions of exercise, rest and sanitation. It takes care of the digestion, the proper regulation of the bowels, bathing, mental therapeutics, and the correct care of the body. Regular detailed reports from each patient are required, and all reasonable discipline is insisted upon, yet the directions, because they are carried out in the patient's own home, are not irksome.

As the Tuberculozyne System of Treatment is purely a home treatment, the evidence of its efficacy found in the accompanying appendix gains peculiar significance and value to every tuberculous or even pretuberculous person. Of late years, owing to the wide advertising of Arizona, Colorado, Egypt, mountains and sea voyages, as essential adjuncts in the treatment of the disease, the public has come to think that the moment it is ascertained a person has contracted consumption, he must necessarily pack off to some sanatorium. There is a sort of general impression, also, that the farther away, and the more inaccessible this sanatorium is, the more powerfully curative a residence there would prove to be.

That the sanatorium method of treatment has its merits is not to be denied, but an examination of what sanatorium treatment consists of discovers that its chief elements are hygienic discipline, an abundance of fresh air, proper diet, and rest. In other words, if the patient is benefited at all by his residence at a sanatorium it is because he is there compelled to adopt a hygienic mode of life, and made to live largely in the open air.

During a four to six months' stay at a sanatorium, a patient will usually make decided progress, and also gain sound views as to hygiene and sanitation. But that this is not all that is necessary is proved by the fact that only too often the gain made is soon lost.

According to the statistics of the German Imperial Health Office only 21 per cent. of those reported cured by sanatorium methods were able to work four years later, although the original proportion of those discharged as cured was eighty-seven in one hundred. This shows that fresh air and hygienic methods are powerful factors in treatment, but apparently something else is necessary to assure permanency of results.

Dr. West, one of England's greatest authorities, says: "Sanatorium treatment cannot change the natural course of the disease. It will not cure the disease, but assists the patient to resist." Lindsay, in the same connection, declares that climate "is a means to an end; not a complete therapeusis" (system of cure).

All that climate—sanatorium treatment—is good for, in his opinion, is to improve appetite, nutrition, and promote happiness. If we can do this in any place, then that place is as suitable as another for the successful management of the disease. We know there are some who think climate is a specific in tuberculosis, but this view is no longer maintained by the authorities, except in very unusual and comparatively rare cases.

The reports of the effects of the Tuberculozyne System of Home Treatment would indicate that these results would be obtained without going to a sanatorium. Consequently, such objections as are made to the latter form of treatment gain in authority.

One of the chief drawbacks of sanatorium treatment is that it is too expensive for the average

person. Association with so many other tubercular people has a bad effect upon many patients. The chief subject of conversation in these fresh air hospitals is symptoms, symptoms, symptoms; and the majority are continually expressing the wish, after the first two or three weeks, that they could leave the place and go back home. Constant talking about and dwelling upon their various symptoms and ill feelings has an extremely depressing effect on any patient. Many anticipate their departure months ahead of its arrival, and keep themselves and every one around them in a ferment of homesickness.

As a usual thing, because of the desire of the average patient to get back home, and the financial limitations of many, the course of treatment taken may be much too short, and the instant there is noticed any decided gain in their condition, away they go, back home.

Entertaining the idea that they are recovered, they fall back quickly into their former mode of life, with the result, as statistics indicate, that quite a number relapse sooner or later.

At home, conditions for the successful carrying

on of treatment can be made almost ideal. The patient is relieved of the worry consequent on an outlay which, in many cases, he can ill afford. With a little effort almost any home can be turned into an open air sanatorium, and there is no reason why the average patient should not be able to follow hygienic methods as successfully in his own home as in a sanatorium.

Given these requirements, the patient enjoys advantages only a home can supply. He has the companionship of his friends and loved ones. He is surrounded by solicitous care, which is unmarred by even the suspicion of mercenarism. He escapes the sense of loneliness that preys on almost every sanatorium patient.

At home the patient's mind may be made placid and contented; his courage sustained by the fortitude of those whose heartfelt desire is that he shall recover. With these conditions established, home may be the one place most conducive to the patient's recovery.

Those in moderate circumstances, by staying at home, and thus relieving themselves of the expense inseparable from residence in a sana-

torium, are made financially better able to command appropriate clothing and those luxuries of the table so necessary, because of their variety and nutritiousness, to keep them in a contented frame of mind as well as fortify their strength. When at home, the business man also finds less occasion to worry regarding his business or other occupation. When he is separated from his means of livelihood, not only by distance, but by the express commands of his sanatorium physician that he shall forget it entirely,—abandon it; in fact, he is very apt to worry. When the patient, instead of going away, stays at home, however, this source of worry is avoided.

The object of sanatorium treatment is to flood, as it were, the tubercular area with healthy blood by pure air, restore the digestive organs, rebuild the nerves, and produce flesh and strength by proper food and rest; and since all these results have been and are every day accomplished in patients' homes, there is no imperative necessity for the patient going away.

I believe that many will be very glad, indeed, to know that the necessity for going away applies

only in a comparatively few cases. There are few consumptives to whom leaving their homes and families is a pleasant prospect. They will be glad to learn, therefore, that a long journey from home and a residence of months in some distant sanatorium, with its attendant expense, is not an essential of success.

It is the duty of the physician to inspire, if possible, enthusiasm and hope in the patient, and the physician is in a position to do this with greater success than any one else, for he can often see by the reports of his patient that an improvement has actually taken place, whereas to the patient no improvement is noticeable. At such times, when despondency asserts itself, the patient needs an educated, sympathetic friend, such as his physician should be, to point out to him just why and when his condition is improved. A convincing heart to heart talk or letter at such a time will often do more to inspire his courage than a week of routine treatment.

The patient's mental activity should be given direction and impulse, if necessary. The body is simply the servant of the mind, and is under the

influence of the mind at all times. If the mind be depressed, the tissues lose tone, and it is known that, under the influence of melancholy, anger, and other emotions, some of the secretions of the body become violently poisonous. This proves mind has a wonderful control over the physical body, and so, both patient and physician must work together, to ensure healthy and cheerful thoughts at all times. It is a splendid thing to give the patient an object in life, for this inspires the will to be and to do, which has tremendous sustaining power. It is quite proper, I think, under the circumstances, for the patient, if he sees fit to discuss his business or social affairs with his physician, but, of course, under the seal of secrecy, so that the latter may, in his wisdom, direct the former, if possible, toward a greater material success. To prosper in one's undertaking and to be successful in life, gives wonderful energy and impetus to the human system.

The regulation of the digestion and its development into a strong, powerful and dependable function of the body, is one of the immediate and most important duties of the physician.

It is really remarkable how stubborn dyspepsia can be when improperly treated, and how quickly a competent medical man can, with the proper remedies and diet, cause it to disappear. It seems magical, but like all wonderful happenings, when understood, it has nothing of the uncanny or occult about it, but simply illustrates the certain effectiveness of real scientific knowledge.

Food science has been developed in the last few years into a wonderful strength-building system, and by its means the physician in charge of a case of tuberculosis can usually banish the signs of dyspepsia, and rapidly inspire the nutrition of the entire system.

The bill of fare of the tuberculosis expert looks very familiar to the average person, and at first glance does not appear different in any way from the meals served in the ordinary home; but a chemist acquainted with the constituents of foods would see at a glance that the meals of the expert were so balanced as to furnish not only the maximum amount of pleasure, but also the maximum of heat, strength and fat-forming elements.

The physician, when he makes out his bill of fare, knows just what he wants that meal to do. He wants to provide his patient a certain amount of energy, with a certain amount of excess fat, with a certain amount of new tissue. He orders foods, therefore, which will be turned into just these organic qualities.

To the healthy man to know the proportion of protein, hydrocarbon, etc., in the articles he eats, is of little interest, but to the tuberculous man or woman who is fighting a sleepless and relentless foe, seeking hourly and momentarily to undermine the foundations of his or her constitution, this intimate knowledge of food values is very important, and if he does not possess it himself, he should be under the direction of the physician who does.

A competent physician can do much for his patient to make life easier and happier. If there are certain distressing symptoms of a trifling character, such as heartburn, headache, etc., he can easily instruct his patient how to overcome them by simple household means. He can also suggest delightful dishes, such as the recipe for

egg albumen, which makes a most delicious morsel. It is his business to know when to advise raw or partially raw meat instead of that which has been cooked; or dessicated meat, when the latter would be more sustaining than the solid piece.

As a general thing the tuberculous person is urged to eat voluminously, but it is not desirable that he should eat haphazardly; consequently his supervising physician will order such a schedule of diet as will fit in with the convenience of the patient, afford him full nourishment, and at the same time, give the adequate and necessary intervals of rest.

These apparently trifling details, when intelligently regulated, combine into a marvelous power for good, so increasing the vital force of the system that the disease can make no progress, and will, therefore, eventually, all being well, be made to yield. Even if the patient does not have the benefit of the Tuberculozyne medical treatment, I still believe the hygienic treatment and general advice given in this book will be invaluable to him.

The tuberculous patient has duties towards

those around him. For his own sake, as well as others, he should not expectorate into a handkerchief, for this results in the bacilli drying and shaking off into the lining of his pocket. Many a man who has neglected this simple precaution carries around in his pocket more than enough bacilli to infect all his friends, relatives and associates, not excepting reinfection of himself.

Sputum, if not deposited in a cuspidor, which should always contain water, should be spat into a Japanese paper handkerchief or a piece of waste, which should then be put inside a paper bag before it is replaced in the pocket. At frequent intervals this waste or paper handkerchief should be destroyed by fire. Under no circumstances should a tuberculous person spit indiscriminately. By so doing he endangers every one around him; and do not forget this, himself also, for his own dried sputum may float back into his own lungs and reinfect them in another place.

Sun and air quickly destroy the bacilli. The consumptive should, however, never spit on the sidewalk, for the sputum may get upon the shoes

or clothing of passers-by, and in that way be carried into dwellings.

It is the duty of every consumptive to see that his home is made properly antiseptic. If one knows how to go about destroying the germs that may have accumulated in the home of a tuberculous person, he can quickly make the house sanitary without any more than a temporary inconvenience to its occupants. If this is not done, however; if the patient's home is not made medically clean by proper instructions from a competent physician, it may continue a very hotbed and forcing house for the bacilli. Such a home is a deadly danger not only to every person who steps across its threshold, but also to those who occupy it, not excepting, remember, the tuberculous occupant himself.

On request we will furnish without charge full instructions for the disinfection of the home.

The medical treatment of tuberculosis is very important. If in the consumptive the functions of the body lie supine under the debilitating influence of the disease, they must be invigorated and revived with hygienic and dietetic measures.

Certain remedies are needed in certain cases to spur on digestion. The digestive organs, through neglect or ignorance, may become almost functionally inactive. This condition must be antagonized by quick-acting, but wholesome medicines. There are occasions in which an essential secretion must be artificially supplied, at least, for the time being.

The patient should have a good appetite, and there are medicines which do much toward increasing largely the desire for food and the corresponding satisfaction in its consumption.

We have no right to scatter germs about. We should be as careful to make sure they shall do no harm to others, as we would if the sputum were so much deadly poison,—which in fact it is.

Consumptives should realize that on them individually depends the ultimate triumph of humanity over this terrible disease. It is the patient himself, individually and collectively, who must do the preventing,—and by performing this duty faithfully he serves his fellow man and serves himself as well.

The physician expert in the treatment of tuber-

culosis knows not only how to direct the daily lives of well-to-do people, but, coming in contact as he does with people in all stations of life, he is equipped to give those who are not well off in this world's goods clever suggestions how they may at slight expense equip themselves with warm coverings, fresh air appliances, and cheap, but effective, means of correcting the sanitation of their homes. To such people the Tuberculozyne System of Treatment is doubly valuable.

For example: almost any amount of money can be spent to provide the patient with open-air living and sleeping accommodations. The wealthy will spend hundreds of dollars, whereas the man in moderate circumstances must devise something costing a very small amount, or, better still, something he can make himself. The expert should, therefore, not only be competent as a physician, but also somewhat expert in tents and window carpentry. It often devolves upon us to give instructions how windows and porches may be adapted to the patient's purposes. Many have no idea how to establish an outdoor or semi-outdoor sleeping apartment.

To these we can give very helpful and practical suggestions, in most instances very easily carried out at slight expense. With a few practical hints they see how changes can be made that will create admirable sanatorium accommodations, which without this advice they would not have thought possible.

When diarrhoea is present, medicines are absolutely demanded, and the proper choice of remedies will result in an immediate increase in the well-being of the patient. Diarrhoea is one of the greatest drawbacks possible to the steady progress of a case toward recovery. It may defeat every effort unless it can be overcome. Medicines and proper diet are our surest means of correcting this condition.

The normal growth of nutrition may be a little too slow, and this is apt to be the case especially with those patients in whom it is essential to develop the bodily strength at the earliest possible moment. We therefore need dependable tissue-forming remedies, and possibly some that will prevent destruction of tissue.

Where we have pain the proper remedy may

come as a balm and a blessing. This is especially true in cases of throat tuberculosis. Under no circumstances, except those in which it is an unavoidable necessity, should nerve-numbing drugs be administered. Pain is often the cry of starved nerves, and the way to correct this condition and the pain thus caused is to increase the nutrition of the body.

Cough is one of the distressing symptoms of tuberculosis, of which the average patient wishes to be speedily relieved. As stated elsewhere, cough is a safety valve, and it is the duty of the physician not to stop it, but only, if it be harsh and painful, to make it mild and painless.

Landerer says "it is possible under certain circumstances, with certain remedies, to promote the growth of connective tissue about the tuberculous abscess, so that the disease may be limited and conditions favorable to rapid healing produced."

It is also necessary in some cases to loosen the sputum or phlegm. Occasionally this phlegm is so tenacious that it racks the patient from crown to heel to relieve himself of even a trifling quantity

of it. Such cases need attention at once, for these periodical strainings of the system exhaust the strength needed to combat the disease.

The Tuberculozyne System of Treatment is designed to build up the constitutional force and to inspire the failing physical powers to new and successful efforts. If adopted early, before the disease has made serious inroads, its faithful use for some weeks should result in decided benefit.

Already the Tuberculozyne System of Treatment has been administered to many hundreds of patients in every stage of lung disease. Many of these people, even when they feared their case was hopeless, determined to try this, and in these extreme cases, the results obtained have often been remarkable, not only in the health regained, but in the shortness of time consumed in bringing about these unexpected results. Naturally, the percentage of success is greater among those suffering from the earlier or minor stages of lung disease. It is these earlier, milder cases we would advise to take treatment at once, for if hopeless and helpless ones, sinking slowly and

silently toward the Great Unknown, found in the Tuberculozyne System of Treatment life and health, these less desperate sufferers are surely warranted in expecting equal benefits.

That it is effective, which after all is the chief virtue of any form of treatment, is, I think, amply proven by the reports contained in the appendix.

NOTE

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